

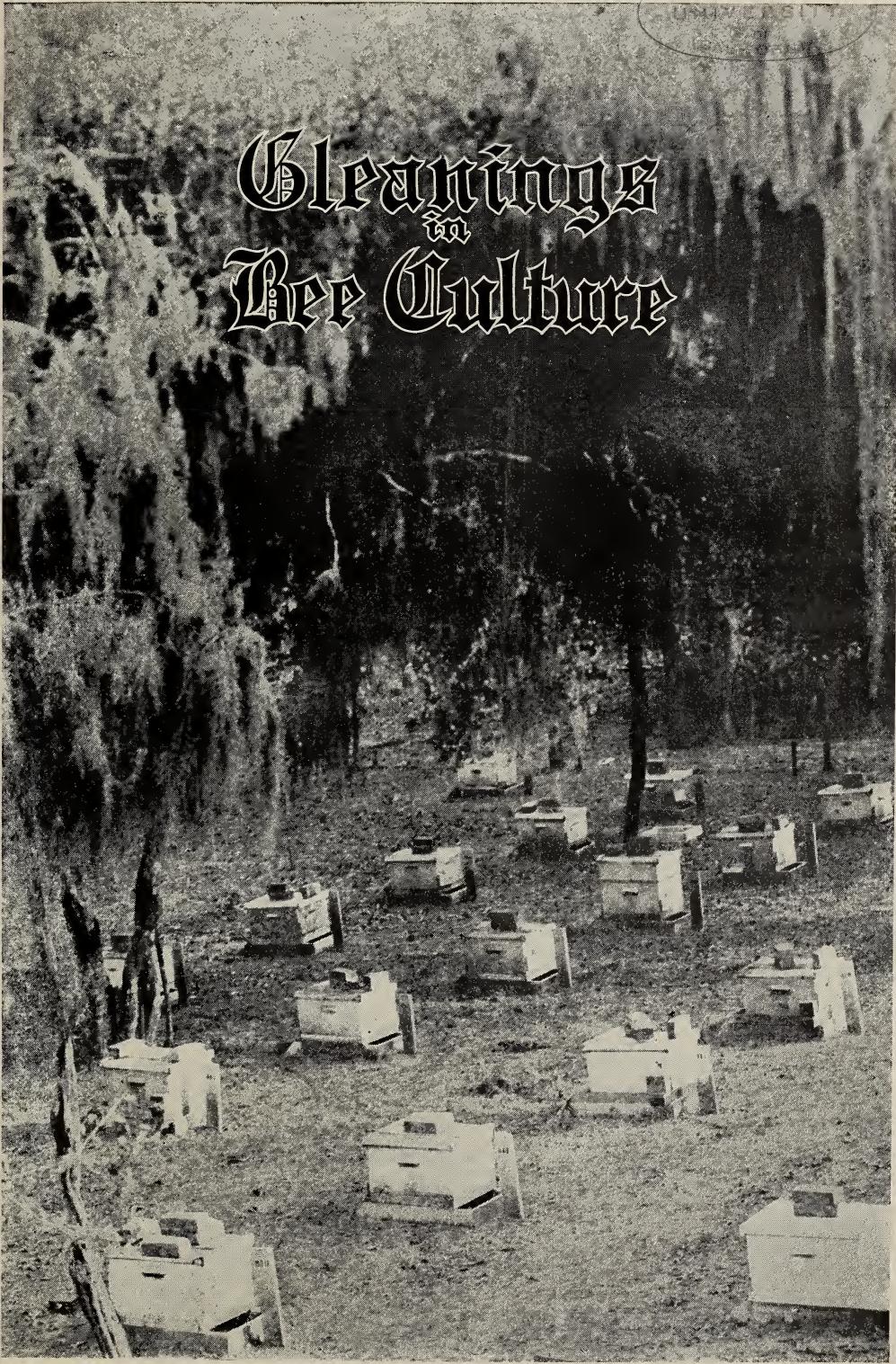
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Gleanings in Bee Culture



Photographic Contest

In order to keep in close touch at all times with what is being done by both the amateur and professional bee men and women in lines of beauty, as well as utility, we take pleasure in announcing another photographic contest, believing that the photographs will tell an eloquent story of a busy season of work among the bees.

We believe that no prize we could offer to the beekeeper would be so highly valued as a queen bee. We, therefore, offer a number of queens of our own stock, carefully selected for years for those qualities which are so valuable to the honey-producer, as well as queens from stock of other well-known breeders.

The territory covered in this contest is domestic, including Canada. The following rules will govern:

FIRST: The contest will begin February 15th and end July 1st, 1915. All photographs must be in our hands at the last-named date.

SECOND: Competition is limited to beekeepers or some member of the family. Entries may be made for as many different classes as may be desired, but a photograph entered for one class cannot be entered for another.

THIRD: Each photograph must be marked on the back with the name and address of the sender, with the class for which it is entered; a short description of about one hun-

dred words accompanying it and stating the conditions under which it was taken.

FOURTH: In judging the photographs the general appearance, neatness, convenience of the apiary, or exhibit, will be taken into consideration. Photos may be sent unmounted. We rather prefer them this way, and in a smooth or glossy finish if possible. We much prefer dark photographs. Of course, they must not be too dark.

FIFTH: All photographs and correspondence regarding the same should be addressed to Advertising Department, The A. I. Root Company, Medina, Ohio.

The Following are the Classes in which Entries May be Made:

Class A: Photo showing the most artistic arrangement, all things considered, of ten or less colonies of bees.

Class B: Photo bringing out possibility of keeping some bees even where stock or people must pass close by.

Class C: Most artistic and practical arrangement of any apiary of ten to one hundred colonies.

Class D: Best view of an apiary of one hundred colonies or over from a practical standpoint. East of the Mississippi River, including Canada.

Class E: Best view of an apiary of one hundred colonies or over from a practical standpoint, west of the Mississippi River.

Class F: Best view of anything relating to beekeeping.

Ten Prizes Offered in EACH CLASS are as Follows:

First: Select tested queen.

Second: Tested queen.

Third: Tested queen.

Fourth: Select untested queen.

Fifth: Untested queen.

Sixth: Select untested queen.

Seventh: Untested queen.

Eighth: Untested queen.

Ninth: Untested queen.

Tenth: Untested queen.

Queens for prizes first to fifth in each are from our own apiaries. The queens offered as prizes from sixth to tenth in each class are from other well-known successful breeders.

The A. I. Root Co., Medina, Ohio

Gleanings in Bee Culture

Published by The A. I. Root Co., Medina, Ohio

A. I. ROOT, Editor Home Department

J. T. CALVERT, Business Manager

H. H. ROOT, Managing Editor

E. R. ROOT, Editor

A. L. BOYDEN, Advertising Manager.

Entered at the Postoffice, Medina, Ohio, as second-class matter

VOL. XLIII.

FEBRUARY 15, 1915

NO. 4

EDITORIALS

BE sure to rake the entrances of outdoor colonies clear of dead bees. If the entrance clogs the colony will die.

Queen-cage Candy Made out of Invert Sugar

THE ordinary queen-cage candy that has been used for so many years is a mixture of powdered cane sugar and honey, mixed into a stiff dough; but on account of the danger of carrying bee disease we have thought that we might use invert sugar instead, since boiling to prevent infection spoils it for bee feed as before explained. We have been making up some candy made with invert sugar, and so far it looks all right. If it can be used as a substitute for honey it will eliminate all possibility of transmitting bee disease in queen-cages.

The Editor's Whirlwind Western Trip

ABOUT the time this journal is on its way, the editor will be making a trip through the great West. We will go to Denver to attend the National convention, and from that point we will move on to the great Northwest, taking in Idaho Falls and vicinity. From here we will go to Portland, San Francisco, Los Angeles, San Diego, Imperial Valley, Cal., we hear so much about; Phoenix, Arizona; San Antonio, Texas; St. Louis, Mo., and then on home, arriving at Medina about the 15th of March. It will be a whirlwind of a trip, but the object is to get data for GLEANINGS. We have not been through the West since 1901, and the result of that trip was to make material modifications of some instructions in our A B C and X Y Z of Bee Culture. Oftentimes a method or practice that will work in the East will not work in the West.

Honey for Baking Purposes

BEFORE the present war began there was an artificial product that was coming in as a sharp competitor of the cheaper honey for

baking purposes, namely, invert sugar. This is made by heating cane sugar with some acid—generally tartaric—to invert it. Of course, when invert sugar is cheaper than honey, it will be used by bakers very largely; but the sharp advance in the price of cane sugar or granulated sugar put invert sugar so high that bakers could not use it, and hence they have been going back to honey. As a general rule, invert sugar will be about a cent a pound higher than granulated sugar. When granulated sugar was 4 cents invert sugar would be 5 cents. Before the Great War there was very little honey of any grade that could be bought at that price, and hence many bakers were using the artificial product. The tables are turned (thanks to the war) in our favor now.

Winter Feeding and Breeding in Cellars

A good many of our subscribers have been skeptical about the possibilities of building up a weak colony in the cellar to a fair colony by spring. Some of our best beekeepers say it cannot be done. Some others believe that E. R. R. has allowed his enthusiasm to run away with his judgment. Still others aver that any and all kinds of feeding in the cellar stimulate activity; activity reacts, causing more eating, and overeating causes dysentery, and dysentery causes death. But, nevertheless, we have demonstrated that we have been able to do this kind of feeding, and cause the bees to breed and build up in the cellar. Mr. Rea, in this issue, page 150, shows how this is done. The bees in the cellar that have been fed since the 9th of January, and up to the present date, Feb. 10, have been breeding, are dry and clean, and show no traces whatsoever of dysentery. But it is important to have the candy right. Syrup or any liquid food will not answer. The candy must be hard enough and soft enough so that the food supply will come *regularly* and *continuously*. A candy that is not just right will spoil the whole thing. To be frank, we have

not been able to get it always perfect in times past. Mr. Rea (see page 150) has probably got it nearly right. If we can use a candy made with invert sugar without the employment of heat we shall feel that we have nearly solved our problem. More anon.

Our Cover Picture

WE always appreciate criticisms concerning the policies of the editors of GLEANINGS when they are sincerely given; and we are genuinely pleased, of course, when we receive an interesting word of commendation like the following:

Dear Mr. Root:—I have followed with much interest the long series of excellent and interesting photographs on the cover pages of GLEANINGS, and have marveled at your ability to secure a steady and constant supply of such excellent prints. I certainly hope this type of cover on the magazine will not be discontinued.

I venture to enclose a photo herewith which might possibly be used in this connection. It is a partial view of our experimental apiary, taken during the winter months. For this reason the hives are all shown as one-story, and only about one-fifth of the yard is within the field. This view was taken from the roof of the extracting-house, but is not nearly as good a picture as I had hoped for. You have no idea how difficult it is to photograph Spanish moss—unless you have tried it.

The photo also shows my method of numbering colonies, or, rather, hive locations, for I number the stand, not the colony or the queen. The one-inch numbers are stenciled on 1 x 4 x 22-inch stakes which are painted white. I have used this scheme for three years, and find it by far the most satisfactory of any yet suggested. The stakes are placed directly back of the centers of the hive-stands, where they are very convenient to hang the smoker on.

WILMOM NEWELL, State Entomologist.
College Station, Tex., Nov. 26.

The Behavior of that Cluster of Bees behind Panels of Glass; the Essentials of Outdoor Wintering

IN our last issue, page 97, we referred to the fact that that cluster of bees mentioned in the previous issue had become disintegrated; that the protecting shell or wall had been broken, and that the individual members of the cluster were scattered, and many of them chilled to death. We also referred to the fact that the entire cluster was chilled through, and remained chilled for several days. It seemed as if the bees were dead, but after several hours they "came to" when placed inside before the radiator. We wondered at the time whether this freezing of the four days would have a disastrous effect. After the bees were warmed up they were uneasy, and showed unmistakable signs of dysentery, and in the space of four or five days they were all dead.

This goes to show that, when the cluster is too small, or the protection is inadequate,

there comes a time when the cluster loses its power to keep up its individual heat. When that time arrives the protecting wall or shell is broken. The bees become chilled through; and, even though a warm spell may follow, so that they revive, the severe chilling has a disastrous effect, apparently, resulting in dysentery and death.

We have broken into outdoor clusters in years gone by. Some seemed scattered all over the frames while other clusters in other hives were compact, and seemed to be in nice condition. But the first-mentioned bees always died in a few weeks' time. A broken cluster, then, in cold mid-winter is a very bad sign. It is evident that the bees are demoralized and the end is near.

The object-lesson from these observations is that a colony to be wintered outdoors should be strong or well housed. But even good housing (double walls and packing) will be insufficient to protect a weak colony outdoors. But weak colonies very often can be and are wintered in a good bee-cellars that is not too cold nor too warm, that has sufficient ventilation.

The Iowa State Convention; the Need is Education, says Inspector

THE third annual report of State Bee Inspector Frank C. Pellett, of Iowa, for the year 1914, has been published. Besides the short sketch of work accomplished by the inspector during the year 1914, the report contains information of value to the bee-keeper in the care of apiaries and the treatment of diseases. The greater part of the pamphlet is taken up by the papers read at the third annual convention of the Iowa State Beekeepers' Association at Ames, Nov. 17-19, 1914.

The inspector found that, owing to the low production of honey and to the spread of European and American foul brood, both conditions due largely to the drouths of 1913 and 1914, many of the farmer bee-keepers are either discouraged and going out of the business or are giving the bees the necessary attention and realizing consequent profits. The writer concludes that these adverse conditions have reacted favorably toward a more businesslike and scientific apiculture within the state. The greatest need is education.

The same conditions which favored the spread of the diseases made it difficult for the inspectors to deal with them. With inspection during a heavy honey-flow, robbing could be started easily, and the disease spread instead of checked. This emphasizes the need in certain localities of county in-

spectors who can work when conditions are favorable. At the same time the report recommends that the code be modified to give the inspectors more latitude in their work. As it now stands, the intricacies of the law are quite beyond the powers of the inspectors.

A further recommendation points out that, with funds which could be derived from taxing bees the same as any other property, research work could be carried on by the state agricultural experiment station and the information properly disseminated for the benefit of the beekeepers.

Among the papers submitted to the state convention and published in the report was a discussion of temperature and humidity in the wintering of bees by E. F. Phillips, Ph. D., of the national Department of Agriculture. This has been published in a Government bulletin, and was reviewed on page 71, Jan. 15. Wesley Foster, of Boulder, Col., presented methods of co-operative marketing of honey. L. H. Pammel's paper on honey-plants of Iowa calls attention to the values of the willows, the maples, the dandelion, the apple, plum, and cherry trees; the berries, the clovers except red clover, motherwort, catnip, heartsease, boneset, and goldenrod. Dr. Burton N. Gates, of the Massachusetts Agricultural College, adds force to a much-proclaimed truth in his paper entitled "The Value of Bees in Horticulture." L. A. Kenoyer reports entomological investigations among wild bees. C. P. Dadant furnishes a sketch of beekeeping from the dawn of man's recollection.

How to Make "Fondant" or other Soft Candy for Mid-winter Feeding

WE have referred to the desirability of avoiding the use of honey in making queen-cage candy on account of the danger of transmitting bee-disease—see page 4, Jan. 1. Elsewhere in this department will be found a statement concerning the making of candy with invert sugar, which, chemically speaking, is very nearly the same thing as honey. Others have been working on this problem of making bee-candy that will contain no possible germs of disease—notably Mr. O. F. Fuller, of Blackstone, Mass., and Dr. Burton N. Gates, of the Massachusetts Agricultural College. On page 435, July 1, 1913, we gave a brief review of an address by Mr. Fuller, on how to make bee-candy with glucose, or what has been technically called "fondant." During that time a good many inquiries have come in concerning it. As this is the time of year when possibly

some bees in winter quarters may be running short of stores, it is proper to consider how they may be supplied with food when no combs of sealed stores are available. Mr. Fuller and Dr. Gates have both said that the fondant such as they have described could be and has been used for winter food. In this connection we see no reason why queen-cage candy made by mixing invert sugar and powdered sugar together could not be used in the same way, as invert sugar contains no deleterious acids, and, apparently, it can be used precisely the same as honey in the making of old-fashioned queen-cage candy known as "Good candy." This is made by mixing sugar and honey (or invert sugar), and kneading it into a stiff dough. No heat is employed whatever in the process, and in this respect, other things being equal, it would seem to be much superior to the Fuller candy using glucose and a high degree of temperature. If there is too much or too little heat there will be trouble.

However, there has been so much call for information on the use of and how to make Fuller candy, or "fondant," that we have thought best to give a brief digest of Bulletin No. 7A, by Dr. Gates, describing it.

This candy, says Dr. Gates, has numerous advantages and possibilities. It is found to be a satisfactory stimulative feed; a feed for bees in transit, and satisfactory as winter stores. Colonies have been observed to leave natural stores for the candy. Some of the advantages claimed for the candy are the ease with which it is handled or supplied; the fact that it may be made in quantities, and stored until needed; failure to incite robbing; the ability to provision colonies with known amounts or weights, and its freedom from infection. There is no waste by evaporation or spilling, as is the case with liquid feed.

The candy may be made in any degree of hardness or softness, and may be stored for years if properly handled. It may be molded in pie-plates or feeders, or boards may be nailed to the side of a frame, and the candy poured and molded within the frame, allowing this to be hung in the hive adjacent to the cluster.

The latest recipe for soft candy is as follows:

12 lbs. granulated sugar;

1 1/2 lbs. liquid glucose, or granular mixed with water;

1 1/4 quarts of water (equal to 40 oz., 5 cupfuls);

1/4 teaspoonful cream of tartar, added when the temperature reaches about 230 degrees F., or 110 degrees C.

Boil to 238 degrees F., or 114.4 degrees C.

The measures should be accurate. A

wooden paddle is superior to a spoon in stirring or beating the candy. A confectioner's thermometer is an advantage.

As soon as the sugar has begun to dissolve, prior to boiling, remove the paddle from the kettle, and do not stir while cooking. To do so will cause a coarse grain. Remove and cool to 125 to 130 degrees F., when the specified boiling-point has been reached. Then stir it vigorously until the mass appears in color and consistency like boiled starch or paste. At once pour into feeders and cool.

FINE-GRAINED CONTENTS FOR QUEENLESS CAGES.

Another way to cool the candy is to prepare a marble slab with bars of square iron, making a form. The candy may be poured upon the marble, and with broad putty-knives the mass may be beaten or worked upon the marble. This produces a finer grain, and usually a firmer and whiter fondant for use in queen-mailing cages or the transportation of bees.

By varying the boiling-point at which the candy is removed from the stove its hardness may be controlled. Furthermore, it should be boiled to one or two degrees higher on cloudy or gloomy days than on dry days.

STORING THE CANDY.

The fondant is best stored in a covered earthen crock which preserves the normal moisture. Over the mass should be placed a sheet of paraffin paper upon which is a moist cloth or towel. Queen-cage candy should always be kept in this way to preserve its consistency.

REMAKING THE CANDY.

If at any time the candy hardens it may be softened by the application of a few drops of water, and may be recoked by the addition of a small amount of water, and boiling as before.

=====

Bees from the Akron Swamp Inclined to Show Dysentery

Our readers will remember that last fall we carried several yards of bees to points about thirty miles east of us, in the vicinity of that 1000-acre swamp—see pp. 570, 614, 702, 747, 791, and 920, last year's volume.

It will be recalled also that our bees gathered considerable aster honey. Mr. Halter who had them in charge mentioned the fact that colonies supplied with this food were inclined to show dysentery through the winter. There have been many other similar reports. It is not always that aster honey does this; but fearing that it might do so we moved most of the bees that had been reared in and near the Akron

swamps to Virginia. There were, however, about forty colonies that we kept at home for the purpose of experiment. The greater portion of these we put in our upper bee-cellars, and a part of them are showing dysentery already, and some are as good as dead. We are thanking our stars that we moved practically all the colonies with aster stores to Virginia, where they are having almost daily flights; for be it remembered that, when we examined these bees in January, there were no traces of dysentery.

GREENHOUSE FOR CURING COLONIES AFFECTED WITH DYSENTERY

For the purpose of experiment we are placing some of these colonies that have dysentery as a result of the aster stores in a small greenhouse in the hope that we can save them.

Early last winter we had one colony showing slight signs of dysentery. This we placed upstairs in our office building, in a warm room. In front of it, to catch the flight of the bees, we placed one of our regular wire-cloth cages that we use when a colony is attacked by robbers. This is 4 feet long, 2 feet high, and 2 feet wide. Many of the bees actually did fly out into this and discharge their feces. Some of them returned, but the most of them worried themselves on the wire cloth and died. There must be a couple of pounds of dead bees lying on the floor of the cage. Examination of the hive this morning, Feb. 10, showed quite a cluster of nice bees; and although this colony has been in a warm room continuously it shows no signs of dysentery. As a cure for the malady it worked well, but as a wintering proposition it can hardly be called a success.

But possibly a cage like this may be used, or, better, a greenhouse, to let some colonies from the cellar afflicted with dysentery clean up in the absence of any warm flight days. We will give our readers a little later the benefit of our experiments.

By the way, our bees, with the exceptions noted, some 300 colonies, are wintering nicely in our cellars.

Oh, yes! another exception should be noted; and that is, that bees for exhibition purposes that have been on display in the windows of drugstores and groceries to advertise honey are practically good for nothing when brought back. These were put into the cellar, thinking we might save them; but the general disturbance and excitement of several days of exhibition got them so demoralized that they kept on with their uneasiness until they all died off. We have concluded that exhibition bees, after they have served the purpose of advertising, are practically a total loss.

Dr. C. C. Miller

STRAY STRAWS

Marengo, Ill.



C. F. BENDER writes: "My experience is different from that of Mr. Herrod, p. 5. I have always put away my extracting-combs wet, and have had much trouble with moth larvæ."

I. E. FIELD, when I cage a queen in a mild case of European foul brood I do nothing whatever with the brood—just leave it, and in most cases the bees will clean it out when it dries up.

F. M. BALDWIN calls for experience as to introducing queens by daubing with honey, p. 67. That plan was common 50 years ago. As little has been said about it lately, I suspect it was not always successful.

JAMES D. BENSON, p. 82, when a colony swarms, kills cells, and puts "back four or five frames of brood in an eight-frame hive." In other words he replaces three or four frames with foundation. I should expect my bees to swarm again within 24 hours.

D. E. LHOMMEDIEU, p. 125, objects that Miss Wilson let the bees be queenless a day before smoking in the new queen, and says the queen should be smoked in just as soon as the old queen is caught out of the hive. But that's not according to Arthur C. Miller, friend Lhommedieu, who says the bees may be queenless any length of time.

"It is suggested . . . that a smoker be held" at the Denver convention, says the program. Is that suggested by some one who doesn't know that few beekeepers use tobacco, or has there been a deterioration in late years? [Some of us who do not use the weed might use a bee-smoker filled with greasy waste; then we can all "smoke."—Ed.]

T. MAGUIRE, *Beekeepers' Gazette*, 120, says: "Last May we had, perhaps, the most severe frost in living memory, and, notwithstanding this, we had also one of the finest crops of fruit gathered for a long time. . . . But, again, in certain seasons a slight frost seems to kill off the blooms." In the latter case he thinks the frost is not to blame for the loss of the crop, but the persistence of cold winds which prevent the bees from flying. He is likely right in thinking that few realize the full value of bees to the fruit crop.

J. L. BYER is quite right, p. 97, that sometimes one may better his chances for wintering bees by moving further north. Not only snow, but wind, makes a big difference. I'd rather take my chances 200

miles north of Marengo in a still place than to stand the piercing prairie winds here. [We agree with you and Mr. Byer; and we also agree with you that a spot protected from high winds is much better for bees wintered outdoors than a place that is exposed. We are beginning to believe that bees in single-walled hives in a protected location are better off than in double-walled hives in a place where fierce piercing winds can strike them. Of course it is better to have both the double-packed walls and the protection from winds.—ED.]

WESLEY FOSTER, p. 98, like J. G. Brown, wants me to substitute something else for white clover in this two-for-one-ready-for-the-clover-harvest business. Not on your life, Wesley. White clover is what I was talking about—not sweet clover, alfalfa, buckwheat, nor any thing else. You say you can increase your crop of white sweet clover by early dividing. So can I—at least I think I can—right here in Illinois, without going to Colorado. I notice you specify *white* sweet clover, which, I suppose, means you want to leave out yellow sweet clover, which comes earlier. Now I wonder if you Colorado fellows realize that white clover comes still earlier than yellow sweet clover. Last year I noted the first white-clover blossom May 27, and the first white-sweet-clover blossom June 23, just 27 days later. (The harvest begins about 10 days later than the first blossom.) That, you see, gives my bees, and I suppose it does yours, 27 days more to build up for the white sweet clover, and that 27 days is enough to make all the difference between success and failure. You say the two colonies build up steadily during June, ready to store surplus July and August. Yes; but while they're building up in June, two or three weeks of the best of the white-clover flow is on, and I've known the harvest to cease July 4. In 1913 the flow continued late—I don't know just when it did stop—and it is just possible I might have gained by dividing; but 1913 was one year in fifty. Now please let's understand each other. I don't object to the Alexander plan of incerase—it's good. I do object to telling the beginner that he can divide by the Alexander or any other plan and have two good strong colonies in place of one ready to commence—not to work on the fag end of, but to commence—on the clover harvest. He'll get left nine times out of ten if not ninety-nine in a hundred. I'm ready to be shown, but that's my honest conviction.

J. E. Crane

SIFTINGS

Middlebury, Vt.



I agree with J. L. Byer, p. 928, Dec. 1, in thinking a ten-pound pail the cheapest and most convenient feeder we have.

* * *

That method of ridding combs of bees for extracting, as given by Geo. Shiber, p. 988, Dec. 15, is well worth remembering, saving, as it does, all brushing, and then making new colonies of the bees carried into the extracting-room.

* * *

Mr. Doolittle tells us on page 887, Nov. 15, how a buyer says he doesn't care for the color of sections—it is the honey he is looking at. Just so. And if it is in sections a little off color, then honey that is a shade off looks better than in white sections.

* * *

"Honey-fizz" at the Connecticut fair at Hartford is another "new idea" surely. Well, when this new, non-alcoholic, refreshing, pleasing, and healthful drink takes the place of the enormous amount of beer now sold there will be something for us beekeepers to do in supplying the quality and quantity of honey required for this purpose.

* * *

On page 920, Nov. 15, Mr. Hardy tells how his beets averaged 19 per cent sugar. If we compare this with the average per cent of sugar in beets one hundred years ago we shall find it almost exactly three times as great. I fear few of us fully appreciate the wonderful improvements that plants as well as animals and even bees are capable of.

* * *

A. E. Crandall, page 843, Nov. 1, tells of the pleasure of a trip with a "bee inspector" down in the Nutmeg State. I have no doubt of the truth of his statements, but I want to call attention to the fact that it gives the inspector quite as much pleasure to take an intelligent beekeeper along with him to discuss the strange ways many people have of keeping bees and the hives they use. Some of the most enjoyable days I have spent in inspecting bees have been of this kind.

* * *

Those pictures of the new apiarian laboratory for apicultural investigations under the United States Department of Agriculture, found on page 856, Nov. 1, and the cover page of Nov. 15, are of more than

usual interest, and we may all rejoice that we have such a home for this division of the entomological section of the Department of Agriculture. We may also rejoice that this line of work has been so ably and vigorously prosecuted in the last few years, and that it is likely to be of even greater value to us in the future.

* * *

Attention is called on page 833, Nov. 1, to the large amount of money offered at the Hartford fair for prizes. This comes of the Connecticut idea. A teacher once asked a small boy how the Connecticut River came to receive its name. The boy replied that it was because it connected Vermont and New Hampshire and cut through Massachusetts. Now the Connecticut State Beekeepers' Association has been in the habit for several years of connecting up with the Charter Oak Fair Association, which holds its fairs at Hartford, by putting up as much money for prizes as the fair association will, which has of late amounted to \$500 per year. Then the beekeepers' association selects a judge for the bee and honey exhibit, and the fair association pays his expenses, and he cuts up the \$500 into premiums and divides it among the beekeepers—Connect-I-cut—don't you see? Not a bad idea for other State beekeepers' associations to follow.

* * *

FEEDING GRANULATED HONEY IN THE SPRING.

In a footnote on page 941 it is stated, "Candy is about the only substitute for good sealed stores we can use in the dead of winter." Beg pardon; but I fail to see why honey granulated solid is not just as good. It is even softer, and I have no doubt more easily taken or liquefied by the bees. It is true that bees will sometimes reject coarse granules of honey; but it is not often the case, and may come from the weakness of the colony; but the loss from this source has never been large. I have even laid combs of honey granulated solid over a good colony and have them remove it, and so save the combs and feed the bees at the same time. Indeed, I have at the present time a lot of sections candied solid that I have laid away for spring feeding. The ease with which bees can be fed in the spring with granulated honey is surprising. You can feed at any time of day, as it doesn't excite them as does liquid feed. The experience of T. P. Clare, page 987, Dec. 15, is of value along this line.

BEEKEEPING IN CALIFORNIA

P. C. Chadwick, Redlands, Cal.



To-day, Jan. 28, we are in midst of the heaviest rain of the season.

Dr. Miller says, page 7, Jan. 1, "Really, one great beauty of bee-keeping is that you never get to the end—always something more to learn." This reminds me of the following quotation:

Learn as though you expect to live always;
Live as though you expect to die tomorrow.

The remarks of the C. C. Clemons Produce Co., page 37, Jan. 1, are sound and of importance. Wesley Foster also covers about the same ground. The marking of honey in the individual amounts should be as near the exact weight as possible. Then the customer knows what he is getting and is willing to pay for the amount received. But, as Mr. Clemons says, when a section is stamped eight ounces and actually contains thirteen, it is not easy to persuade the buyer that he is getting long measure. The American people are not used to long weight, and are likely to look with suspicion on any one who is so un-American as actually to give something away. Mr. Clemons has been in the honey-market for many years. I have been in his establishment when it was known as that of Clemons & Cloon; but later the name was Clemons & Mason.

This year I marked all of my cans with a small label, which read, "Guaranteed sixty pounds net." When filling my cans I set the scale to balance at one pound in excess of the sixty pounds called for. In this way I kept well within the law, felt well satisfied with my measure, and suffered no great loss.

In commenting on the last item, page 7, Jan. 1, the editor in speaking of destroying foul-brood combs uses the word "burn." If there is any word that can be found that grinds my nerves in connection with the eradication of foul brood, it is that word *burn*. I wish for the sake of those who have had their bees destroyed by fire, simply to accomplish the same results that might have been accomplished by hot water, the word *burn* had never appeared in connection with the treatment of disease. A few years ago one of our county inspectors made the assertion before the state convention that he had burned a number of perfectly healthy colonies because they had been shipped into

his county contrary to a county ordinance. I am hoping that I may live to see the day when we shall have a national law regulating the transportation of bees, thus eliminating all state and county ordinances. County ordinances may be all right in the hands of an inspector who can maintain his good judgment after having become an official (if he had any to start with); but with the chances involved the risk is too great. Many of our county ordinances are principally used as a fence to keep other bees out. In at least one instance of which I know, an inspector from another county inspected a shipment for Imperial Co. which he accompanied in person to that county, and they "stuck." Others have been turned back.

California beekeepers should not be misled by the discussion of the A. Swahn letter by Dr. Miller, p. 979, Dec. 15, and J. G. Brown, p. 27, Jan. 1. I consider the argument of Dr. Miller sound as affecting the greater part of our state, and I believe with him that Mr. Alexander's situation was one in a thousand. There are places in the alfalfa districts of the Imperial Valley, as well as some parts of the San Joaquin, where the harvest might be increased by an early division of colonies. But as a rule in the greater portion of the state—in fact, the entire nation, the practice would be detrimental rather than beneficial, so far as increasing the quantity of surplus honey would be concerned. I infer that Dr. Miller believes in one large force of bees to a hive rather than a slightly greater number divided into two hives, and in this I believe he is entirely right. There is no doubt the Alexander plan will work in a few localities; but in most parts of our state, as I have said, it would accomplish very little for the increase of the crop of the same season. I never figure the increase of colonies in the results of my season's crop. If they are increased by natural swarming, the loss as a rule to the parent colony will more than offset the gain from the swarm; but if by dividing, the gain of both will as a rule not equal the loss of the united colony. So my plan is to figure so many colonies spring count. I have never seen a colony so strong that I thought it would be better divided, or would produce more in two hives. Give them room according to their strength and they will do the rest.

BEEKEEPING IN THE SOUTHWEST

Louis H. Scholl, New Braunfels, Texas.



About ten years ago I called the attention of readers of GLEANINGS to the importance of removing as much drone comb as possible from the hives during spring inspection of the colonies, for the reason that it was expensive to leave it. I am still of the same opinion, and give the same advice. Too many beekeepers even to-day allow a great deal of the drone comb to remain in their colonies. It means the rearing of a host of useless consumers at a great expense, and aids in the decrease of our profits. Cut it out!

NEWS NOTES AND PICTURES WANTED.

I should appreciate hearing from the many beekeepers, throughout the Southwest in particular, and over the rest of the state in general, during the year. Photographs of apiaries and other things pertaining to beekeeping will be very welcome. It has been my desire to show up in picture and pen more of Texas beekeeping for a number of years; but it has been almost impossible for me to get out and visit the many beekeeping friends, and snap them and what they have and the things that they do, as I have wished. To make a beginning in this direction of "exposing" some of the big things that are in Texas, and the things that are being done here, I shall be exceedingly glad to get a large number of such pictures and news notes as will be interesting to the readers of GLEANINGS. Due credit will be given in all instances, and, if desired, pictures will be returned when so instructed.

TEXAS BEEKEEPERS, TAKE NOTICE.

The legislature of Texas will have been in session quite a while before our readers get this issue of the journal, but not so long as to have arrived at the measures providing for appropriations for the many things that legislatures are usually called upon to provide for. A request for an appropriation will have been made by the Agricultural and Mechanical College and the Experiment Station for a sum of \$10,000 for the Department of Entomology, most of which amount is to be used for foul-brood-inspection purposes. The request has not yet been filed, so that I am unable to know its exact nature, other than that this amount is asked for, and that the beekeepers are expecting that the greater portion of it will be used

for foul-brood work. In any event, it is important that the beekeepers show their interest in this important matter by either seeing their respective representatives in both the House and the Senate, or writing to them at the earliest opportunity if this has not already been done.

It is very necessary indeed that the members of the legislature be informed as to the needs of the beekeepers so that they may know what is wanted. There has always existed, in the minds of most of the beekeepers and others, that erroneous impression that these men do not pay any attention to such letters from their constituents. I am frank to say that I was at one time guilty of the same belief. Of later years I have been led to change my opinion, because I have associated more or less with these "fellows," and now, since I am a member of the legislature myself, and have learned to know what goes on in such a law-making body, I have found that the members not only do read these letters but consider them, and are desirous of lending a helping hand if they can only know more about the nature of the request.

Of course, I feel that I can be of much help now that I am a member of this body, and I feel that the beekeepers are depending upon me to do my share. Even at this time I have been able to give much information on the subject in question to many of the members who did not understand the matter in the least, and I have already laid plans by which I feel that the measure will be fully understood, and that there will not be any trouble about passing the appropriation measure.

If I can get the additional assurance from the beekeepers that they will inform their representatives I see no reason why we beekeepers of Texas should not be dealt with in a most favorable manner. As I have indicated in many former instances, when matters of such importance were up it is exceedingly important for the beekeepers to do their share of duty, and then, and not until then, can they expect the "other fellow" to do his. For this reason I again hope that, in case the matter has not been reached in the mean time (and I do not think it will be reached during the regular session), every beekeeper will make it a point to inform his representative why we want this money, and that we must have it to protect our industry from which we make our bread and butter.

CONVERSATIONS WITH DOOLITTLE

At Borodino, New York.



POLLEN AND PROPOLIS.

"Mr. Doolittle, I read in GLEANINGS something about bees requiring pollen in order that they might thrive. What is pollen?"

"Pollen is the farina or fertilizing dust from plants and trees necessary for the perfect fruiting of each separate species. This dust is finer than any miller can produce. When the season is late, or pollen is scarce in our locality, bees will take flour, meal, or finely ground oats in lieu thereof. In many localities bees are thus fed in the spring till the pollen-bearing flowers open."

"How do bees gather any thing so fine?"

"If you will examine with a lens one of the hind legs of a worker bee you will find that the stoutest joint is very square-shouldered at the hinge, and that this hinge is well over toward the side of the leg, away from the body of the bee. These shoulders form a pair of jaws, as it were, which open when the leg is bent and close when it is straightened. The upper jaw has a row of spines which strike on a plate on the lower jaw, and thus the bee can use force enough to hold and manipulate things to an extent which seems quite marvelous. In the gathering of pollen these shoulders or jaws are called "pollen-baskets" because they are used for holding the pollen as it is gathered. And the bees often heap these baskets full to overflowing with the loads they bring in from elm, hard maple, and other flowers which are abundant pollen-producers."

"And that is what the bees are carrying when they go running in the hives with 'yellow legs.' Years ago I heard it said that such loads were wax; but I always doubted it."

"Wax is not gathered, as it is not an extraneous substance which needs only to be collected for use."

"But how does the bee cause such minute particles of pollen-dust to stay in those baskets?"

"I do not know that I can answer that question; but from what I could observe by lying down close to a feeder having finely ground oats in it my conclusions were that the bee, when going out in quest of pollen, always took along a little honey in its honey-sac, unless pollen was being gathered from flowers which produced both pollen and nectar. After the bee had rolled about in the flour and taken wing, she seemed to

touch her front feet to her mouth, then rub them about on her dusty body, when the dust which adhered to those feet was transferred back to the next pair of feet, when these in turn were drawn, or partially so, through between the spines and joints spoken of before, which left the now moistened pollen adhering to the pollen-baskets. And thus, by a series of extremely rapid motions, the baskets would be seen to become fuller after each dip and roll-over the bee would take in the oat flour. I have seen this manipulation of pollen nearly or quite as well when the bees were at work on the dandelion. But to get any thing like a correct view the head must be lowered so the bee will be between the eye and the sky."

"And what is the pollen used for?"

"It is taken by the nurse bees, together with honey and water, and, by a sort of individual home manufacture, formed into chyle (similar to that used by the mother pigeon in preparing the 'milk' with which she feeds her young), when it is fed to the larvæ, on which they thrive. No larvæ can be matured without pollen, or something as a substitute. Bees gather only one kind of pollen at a time. While different bees may carry in several colors at the same time, the pellets on any one bee will be all alike."

"Now a few words about propolis. Is that gathered from flowers?"

"No. So far as I know, nothing in the floral line, after opening, gives off propolis. The milkweed flowers are somewhat sticky, and from their peculiar shape often trap the bees which work on them, and hold them fast till they die; but I have never detected bees at work gathering propolis from these flowers. It comes mainly from resinous buds just before they expand, or from the buds which are forming for the next year's growth—mostly from the buds of the balm-of-gilead, in this locality, during August. In the spring they will often be seen collecting it from old hives left standing in the sun, so that it becomes again soft enough for manipulation."

"What use do the bees make of such sticky material?"

"It is mostly used for coating uneven surfaces, and filling up cracks about the inside of the hives or whatever their home may be. It is also used in hermetically sealing up any offensive matter that may be too burdensome for them to remove."

GENERAL CORRESPONDENCE

ANSWERS TO QUESTIONS ON OUTSIDE WINTERING

BY R. F. HOLTERMANN

When giving the methods of wintering outside as practiced by me, in the first place I plainly stated that, so far as the cases and fence are concerned, I learned the method from Jacob Alpaugh, and it appears to me that we should not lose sight of that.

From letters I have received, and from the cover picture in GLEANINGS, Jan. 15, it appears necessary to draw attention to the too frequent way of following (or, rather, *not following*) directions.

If the reader will look at that cover picture he will see that the result of having those covers placed against the winter cases is to bring the snow which has fallen immediately under the entrances up to the hives or cases. If there had been a heavy fall of snow the snow would even block the entrance. Now, to this latter I have no particular objection so long as the snow is removed as soon as a thaw sets in, which would not likely be the case if the beekeeper did not look after the bees during the winter. But such a situation has far worse results. I pointed out in my writings that wherever ice or snow is immediately under the entrance the effect is to chill the bees; and as they fall on the snow or ice they perish. To illustrate, vessels on the Atlantic in the dark are at times able to detect the proximity of icebergs by a fall in temperature. If the temperature in the open is 55 or 60 degrees when the bees fly, the temperature one, two, or three inches from a block of ice would be much lower. The bees flying from the entrances in the illustration might not have perished had the cases been set on blocks nine inches high, and had the snow been, as it would have been in this case, a foot from the entrance. Of course the bees may have been dead ones cleaned out.

Some ask if the small round entrances (three or four $\frac{7}{8}$ -inch holes) are sufficient. All I can say is what I have said. I have cut the wood away at times between two of the holes. Otherwise they have answered the purpose. When beekeepers undertake to enlarge materially and permanently the entrances they do so contrary to the system I use. Again, with a board slanting upward directing the flight to the entrance, the current of air into the entrance is intensified, which in windy weather would be very undesirable.

The illustration on page 61, Jan. 15, shows a full-width entrance with a full-width bridge instead of an entrance 5 inches wide by $\frac{3}{8}$ inch deep, with three $\frac{3}{8}$ -in. holes just under the front board of the hive, as I have them. My method gives much less entrance room, and makes the hive much less liable to be robbed. In fact, there is a vast difference in this respect.

Next, some have not left an opening at the top of the case to allow the air to pass over the packing and carry away the moisture which comes from the bees through the packing. Any one reading my articles will see that I pointed out the necessity of having a $\frac{5}{8}$ -inch hole in the sides of the case and immediately under the cover.

The packing should be of such a quantity that there is an inch or two of space between the packing and the cover, allowing a free circulation of air between. If this is not done, there will be a tendency for moisture, expelled by the bees, to linger about them.

Again, many beekeepers make the cases out of $\frac{7}{8}$ -inch lumber instead of $\frac{1}{2}$ -inch or $\frac{3}{8}$ -inch. It is not a question of price or convenience. I am not going to say that bees cannot be wintered, and often well wintered, in $\frac{7}{8}$ -inch cases; but the object in the thin case is to have the heat of the sun is painted a dark color, as was recommended.

is painted a dark color, as recommended. In carrying on experiments with living things one must be very careful to have all the conditions accurate. To compare certain details, all the other conditions must be alike. This is very difficult to obtain in animal life; and to cover these imperfections one must repeat the tests again and again, and then draw conclusions from the general average of results.

It requires a judicial frame of mind to carry on research work.

My advice is to have shade in the apiary. Fruit-trees leaf out after the cold spring has passed, and therefore, in my estimation, they make a good shade. Have the apiary in a sheltered place. One man in the state of New York recently told me that he was going to locate his apiary on top of a high hill at the north end of a lake. The location may be the ruination of his apiary so far as

profits are concerned. On top of a hill is not a good location unless well sheltered by trees.

I have also had a number of letters from beekeepers about fences.

Several ask about combs melting down in hot weather if there is a fence about the bees. We have had a temperature in the shade of 96 degrees. I have never had any

combs melt down; but I have an entrance to my hives $1\frac{1}{8}$ in. deep by the width of the hive. I do not know what I might have had with an ordinary entrance if I could imagine myself foolish enough to use one. Build your fence so you can take out every second board in the summer, and plenty of air will pass through the apiary.

Brantford, Canada.

THE EDITOR'S PLEASURE-TRIP DOWN THE INDIAN RIVER, FLORIDA

An Interview with O. O. Poppleton, the Famous Bee-king of Southeast Florida; the Long Idea Hive

BY E. R. ROOT

I was unable to finish my Florida articles last spring owing to the lateness of the season; so I decided to defer the publication of the remainder till the following winter, when the thoughts of all bedom are again turned toward Florida and the Southland generally.

Last winter, while visiting with my parents at Bradenton, I received a letter from Mr. W. A. Selser, from his home in Florida, on the east coast, where he goes every winter to recuperate. In this letter he referred to our projected cruise down the southeast

would fish and gather oysters on the way. It is not necessary to go into further details; but the result was that Mr. Selser chartered a cruiser from his neighbor, Capt. F. S. Slifer, or Dr. Slifer, a specialist of Philadelphia, who was also spending his winter in Florida. The doctor had never cruised down among the Keys, and was willing to take our party for a very moderate sum.

We started from Stuart about the 10th of March, last year, with a good supply of eatables and a cook aboard—one who knew



FIG. 1.—The 40-ft. gasoline cruiser in which the editor of GLEANINGS and party cruised up and down the Indian River and inland waters of the southeast coast of Florida, studying beekeeping conditions.

coast of Florida, and he was particularly anxious that Mr. G. M. Gray and his wife (who were with me on the trip) should go along to make up the party with him and Mrs. Selser. As I had covered a portion of the east coast *northward*, Mr. Selser's general proposition, as may be surmised, was very attractive—especially so as he said we

how to do things up right. See Fig. 1. I enjoyed drinking in great drafts of sea-breezes, for I had been sick with chills and fever; but Mrs. Selser said she was going to cure me of all these, and she did. She put me on a diet of fish and eggs, oysters, grapefruit, and oranges. The two last mentioned were served five or six times a

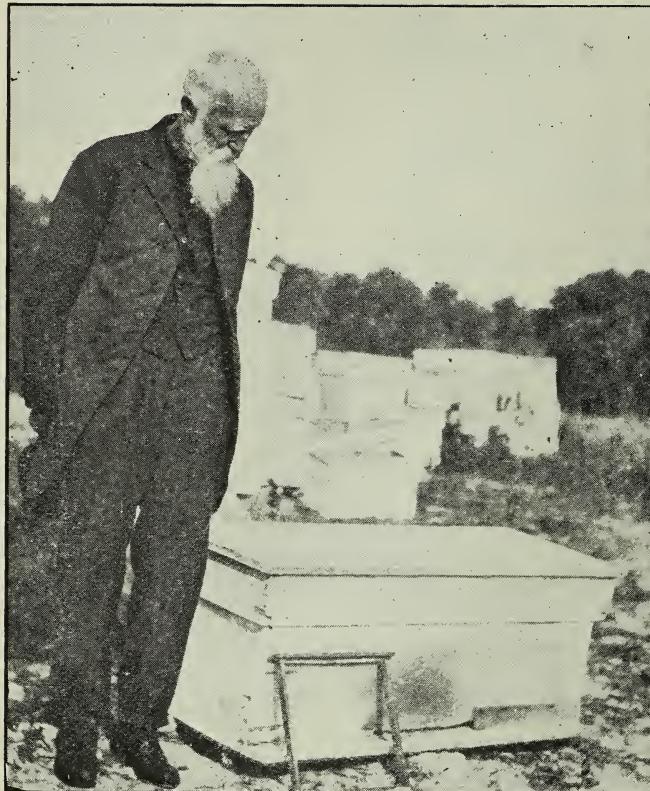


FIG. 2.—O. O. Poppleton standing beside one of his Long Idea hives in Pompano, near Miami, southeast coast of Florida.

day. I had not been long on this trip before my chills disappeared, and I began to build up. A cruiser trip and a genial company aboard will cure almost any sick man. It certainly put me on the high road to health; and I have been comparatively well ever since.

Speaking about grapefruit, I have now "acquired the habit," and a good habit it is. Instead of using the more solid foods I now use the lighter acid fruits such as apples, grapefruit, and oranges with just enough of the proteins to make a balanced ration. Thanks to Mrs. Selser, who did more for me than all the doctors I ever employed, I am beginning to know *how* to live.

Our trip comprised a cruise of some 250 or 300 miles down the Indian River and some smaller rivers. We could stop and eat and sleep anywhere at any time. All we had to do was to cast anchor in the lee of some cape or island. There were no hotel bills to pay; for we could eat and sleep on the boat or go ashore any time we pleased.

When we ran out of eatables we went

ashore and bought at the groceries as cheap as any one. At the end of our trip we divided up the expense, which, outside of the cruiser, was no more than if we had been at home.

At Pompano, on the way down, we picked up Mr. O. O. Poppleton, the "Florida bee-king," whose headquarters for the last ten or twelve years have been Stuart and Miami. Mr. Poppleton has, during all these years, sailed these waters back and forth until he knows them perfectly. His knowledge of the shallow places was invaluable.

At Delray we picked up Charlie Repp, of the Repp Brothers of New Jersey. I have already referred to the interview with him. He is the famous apple-grower, and one of the great friends of the honey-

bee. See GLEANINGS, May 1, 1914, p. 347.
POPPLETON LONG IDEA HIVE.

It will be my purpose this time to tell something about Mr. Poppleton, one of the pioneers of beeedom, who has passed the threescore-and-ten mark by one year, and who to-day bridges the days between Langstroth and Quinby and the present time. Mr. Poppleton was a successful beekeeper in Iowa away back in the early days. He was one of the very first to discover the value of packing and double-walled hives for wintering bees. He used the Long Idea hive of 24 American frames away back in the early days, and has continued to use it throughout all the years since.

Some years ago ill health compelled him to go to Florida, and he, like the rest of us, found there "the fountain of perpetual youth." Although he is now past 70 years of age, he is a man who is remarkably well preserved, and his mind is as clear and strong as it ever was. I counted it a great privilege to spend several days with this man on board our cruiser, where I could

interview him; for he is remembered that Mr. Poppleton was for a number of years the greatest migratory beekeeper in the world. While his operations in this line were not, perhaps, conducted on as large a scale as those of the Root Co. during 1914, yet he carried on the business on a large scale a long time successfully.

Occasionally we used to get little items as to what he was doing. Every now and then there would be a picture of his bees on a gasoline-launch, but beyond these and some very short items about his migratory beekeeping, the bee-world has not seen much of him. The fact that he belongs in the list of old veteran beekeepers alongside of Langstroth, Quinby, Tupper, Gallup, Wagner, Heddon, Hutchinson, Miller, and Root makes him all the more interesting. Of this number there are only two others besides Mr. Poppleton who are still alive.

Some forty or more years ago the merits of the Long Idea hive were extolled in the columns of the old *American Bee Journal*, and, later on, in *GLEANINGS*. This hive primarily consisted of a single brood-nest capable of holding 24 American frames, 12 inches square outside. It was always used as a single brood-chamber, never on the storifying or supering-up plan.

The hive that Mr. Poppleton uses, or did use up to a year ago before he sold out, has a brood-nest or hive-body 40 x 13 inches deep, by 13 wide, inside measure. This will take 24 closed-top American frames, 12 x 12 outside measure. While these dimensions would seem to afford a rather large bee-space for a 13-inch hive Mr. Poppleton was doubtless figuring on the accumulation of propolis and irregularities of construction; for it would have to be made at a regular planing-mill or by a carpenter, as no supply manufacturer makes it. The cover telescopes down over the hive proper, leaving



FIG. 3.—O. O. Poppleton manipulating one of his Long Idea hives at Stuart, Florida.

room in the top for a cushion or packing material if necessary. The body is cleated at the top end and sides to make it convenient to handle. In the illustrations accompanying (Figs. 2 and 3), the general style of the hive will be seen, together with the frame, with Mr. Poppleton standing at one side.

One would think, to look at this hive, that it is about the most unwieldy, clumsy, and awkward thing that could possibly be used for migratory beekeeping. It would seem to be especially so for a man past 70. I have actually heard many persons say, even in Florida, "I do not see how such an intelligent man as O. O. Poppleton can get along with such a monstrosity." Such remarks came even from beekeepers not far distant from him. I must confess that I myself could not see any merit in it; but after having heard Mr. Poppleton explain the hive and system as he uses it I am not sure but I should like to work with it. Indeed, it may be better for migratory beekeeping than any hive of smaller dimensions

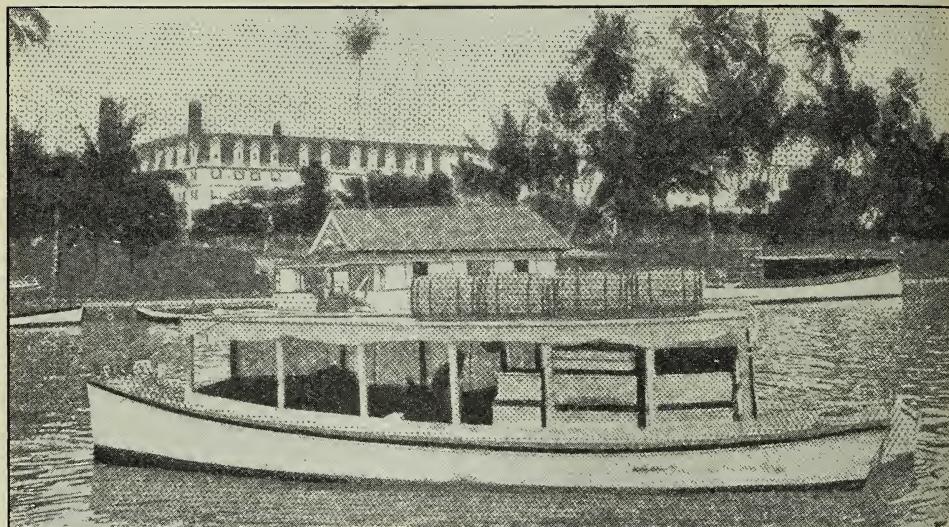


FIG. 4.—Mr. Poppleton's gasoline-launch which he used in his migratory beekeeping on the southeast coast of Florida. This launch was capable of carrying about 50 Long Idea hives at a time, besides bedding and cooking appliances. In the height of the season Mr. Poppleton ate, slept, and extracted in this launch.

worked on the tiering-up plan. The very fact that Mr. Poppleton has used it successfully these many years, and almost all alone, would show that it is not so bad after all.

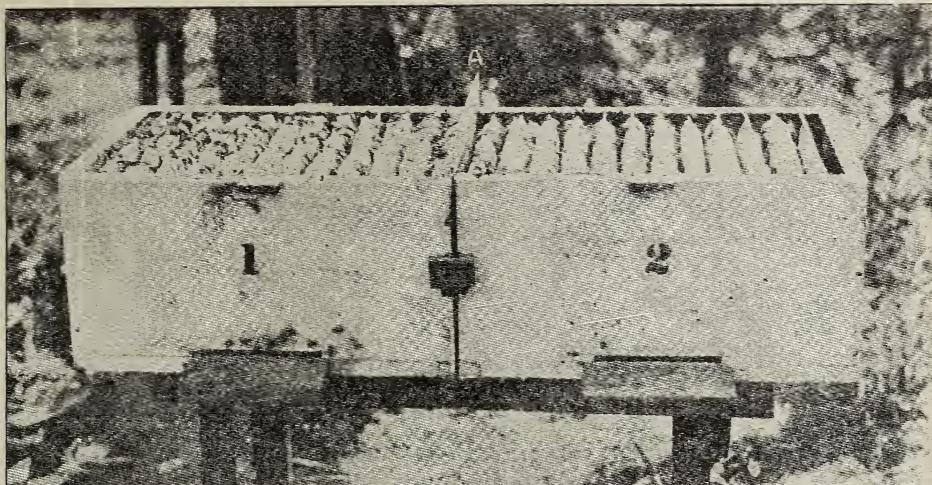
The frames have closed tops. One of these stands in front leaning against the hive—see Fig. 2. Mr. Poppleton is holding another one in the other picture, Fig. 3. The top-bar has two longitudinal slots two inches long by $\frac{3}{8}$ wide. In ordinary practice these are kept closed by strips of wood running transversely over these holes clear across the whole top of the hive. It will be seen, then, that the bees cannot get to the top of the frames, and, of course, they cannot glue the top-bars into the rabbets. All the warm air is kept below. The cover can be removed at any time without a bee coming out. A screwdriver or knife-blade, as soon as the cover is removed, will spread the frames for the purpose of examination or for extraction. Very little bee-glue holds them together, from the fact that the gluing operations are confined wholly to the *under* side.

Now as to the awkwardness and bigness of the hive. Mr. Poppleton explained that, in order to make bees pay in Florida, the colonies must be *very populous*. As a matter of fact, this same principle in apiculture applies almost everywhere. No crop of honey can be secured unless we have powerful colonies—powerful enough to send out a good field force when the honey-flow comes on. An ordinary ten-frame Lang-

stroth hive alone will not hold such a colony. In order to give sufficient room, the hive must be tiered up, one, two, three, or four stories high.

Right here Mr. Poppleton claims a big advantage over those who tier up. Instead of giving eight or ten frames all in a bunch he adds one, two, or three as the colony can stand. His expansion of the brood-nest is gradual, while the expansion on the vertical system is "steady by jumps."

Well, then, we will suppose that he has built his colony up to 24 frames capacity, and is just ready to move his bees to where the pasture is good. It has been argued that the ten-frame hive is big enough to handle—too big, indeed, to lift with comfort. Talk about hives three times as large, toting them down to the boat, and then toting them out again on the land! it looks ridiculous. But it is not as bad as it seems. If one has to handle a big bulky weight it is much easier to have that weight in a horizontal oblong form like a trunk than to have that same form or shape standing on end. If we were to handle a trunk standing on end the handles would be placed midway up and down of what is ordinarily top and bottom. But, no; an ordinary trunk is made a good deal after the shape of the Long Idea hive, with handles in the end. Said Mr. Poppleton, "An ordinary single ten-frame hive is unwieldy for one man to handle alone; but I can handle with a helper, whom I can hire for the occasion, an oblong box two and a half times the weight easier



The Long Idea hive as used by Victor Vargas Gamallo, Professor of Beekeeping at Havana, Cuba.

1, brood-chamber; 2, super; A, queen-excluder.

Courtesy *Nueva Sistema de Colmenas de Barras Móviles*.

than one man can handle a single ten-frame hive;" and I do not know but he is right. If any one could hear Mr. Poppleton explain how he moves his big hives on to the boat, he would see the trick is not as difficult as it might seem.

On the other hand, Mr. Poppleton explains that he is an old man, past 70, when he cannot lift heavy hive bodies or supers full of heavy combs; but he can manipulate his Long Idea hives without lifting any thing heavier than a single comb or cover. He can get at any part of the brood-nest at any time anywhere, and almost instantly. He has no hive-supers nor hive-bodies full of frames to lift. When it comes time to move the bees, he hires a man one day to get hold of the other end of the hives.

There is never any wind powerful enough to blow these hives over. "They will stay right where put," said Mr. Poppleton; and then he explained further that he could not work a ten-frame Langstroth hive on his system. He insisted that he must have strong colonies—nothing less than 24 frames capacity. How, he asked, could he load three eight-frame Langstroth hives tiered up on his boat, and then unload again, without danger of their tipping over? There is no getting around it. A two or three story hive is not a desirable proposition for his system and location. But the same capacity all in one story can be moved.

I said to Mr. Poppleton, "The vertical system permits indefinite expansion; that is, an eight or ten frame hive, Langstroth dimensions, could be tiered up three or four

stories high, or higher if need be." He admitted this, but explained that, with his system of management, he could keep his colonies down to 24 frames capacity.

I suggested that, on the tiering-up principle, we could shut our queens down to the brood-nest with the perforated zinc, and all combs above would be clear of brood for extracting. He explained that he could do the same thing with the division-board excluders, but said that he had never found it necessary to use any thing of that sort.

When it comes to extracting he extracts from one side or end of the hive, and in a few days later from the other end. In this way he takes only ripened honey that has been all capped over. While the bees are filling one end that has been extracted they are ripening and capping at the other end. When that is accomplished it is extracted, and so on the process is repeated.

I suggested that the queen would have brood in many of the frames from which he extracts. He admitted this, but said he was careful in handling such combs. When the queen has an unlimited range, the colony is not likely to swarm if the combs are kept extracted close enough.

In the busy season Mr. Poppleton runs back and forth with his boat to the different yards. In this way he carries his extracting-outfit. In fact, he said that in the height of the season he sometimes eats and sleeps on the boat—see Fig. 4.

Mr. Poppleton has also used his migratory beekeeping in the matter of securing in-

crease. If one yard is earning nothing and doing nothing he moves it to another place where there is something doing. He said that there is quite a difference in various portions of Florida within twenty or even only ten miles of each other. At Pompano, for example, the bees would breed every month in the year. This was one of his favorite breeding-places. Here he built his colonies up and then moved to other locations on the Keys, and further down where honey was coming in.

I told our friend that the Long Idea hive was being revived in certain quarters. Two or three people in Massachusetts, and our old friend J. E. Hand, have been using a sixteen-frame Long Idea hive. "These people are making a mistake," said Mr. Poppleton. "They are not going far enough. The sixteen-frame hive is too big to be handled by one man, and not large enough to be handled by two. Sixteen frames will not hold our best colonies. Mr. Hand's scheme of converting this hive into a double-walled eight-frame hive for winter," said our friend, "is very old," and he would refer us to the back volumes of the bee-journals.

I then asked him whether it would be practicable to make a twenty-four frame hive on Langstroth dimensions. If he were going to start again, rather than take Langstroth frames he would adopt a Jumbo just two inches deeper, and make a hive to hold twenty-five such frames.

In the matter of breeding, Mr. Poppleton says there is no particular advantage in the horizontal Long Idea hive over the vertical

system except in the matter of convenience to the operator or owner. For old people, women, or any other who lack sufficient strength to lift upper stories, the single-brood-chamber principle seems to have some advantage. If it were not for the fact that it is more expensive, and that it is not adapted to the production of comb honey, it might, perhaps, receive more favorable consideration than it does. If one were to start with a hundred of these big hives to accommodate a hundred colonies he might be scared out of the business before beginning. These big hives would cost considerably more than the same capacity on the vertical principle. The tiering-up hive permits the use of narrow and short pieces of lumber in a way that would not be feasible with the Poppleton hive. Large boards of clear or sound-knot stock are expensive as compared with small pieces that have been cut out of cheap lumber, cutting around the knots.

Mr. Poppleton has carried as many as 80 Long Idea hives at a single time in his boat shown in Fig. 4, taking along in addition extracting-outfits, bedding, etc. But that was when he towed the boat with another one. When he put in an engine he could carry fifty at a time with the necessary extracting-outfits and bedding. While he sometimes extracted inside of the boat it was his practice to have a small building at each yard. This structure is of cheap lumber, and of sufficient size to answer as a workshop, extracting-building, and for storage purposes also.

To be continued

THE ORIGIN OF THE HONEYBEE

BY N. N. ALLING

One often reads that the honeybee was made to fertilize the flowers or simply to furnish man with honey and wax. People could not think that it is living for its own sake like any thing else, and had adapted itself from remote ages to the work it is now performing, and thereby secured itself an existence. Plants at the same time have adapted themselves to attract the bee by shaping their flowers and secreting sweet juices so the bee would carry pollen from one blossom to another.

People in general think the way the world is now is as it always has been, but this is not so. In the coal period there was not a single flower on any plant, although there were plenty of insects related to bees. It is natural to think that the bees' ancestors

in the coal period lived more like ants, eating what honey-dew they could find on plants and trees. The bee had no use for pollen-baskets, honey-sac, or wax-pocket. It might not have lived in colonies, as the temperature was high in those days, and there was no need for a winter cluster.

While the workers are undeveloped females now, they might all have been fully developed then. Perhaps the sting was an ovipositor, and the mothers placed the eggs in any crack or hole to hatch by natural heat, leaving the larvæ to take care of themselves as do caterpillars now.

Only slowly, very slowly, did the plants take other shapes through the next formations or periods while the bees kept pace with the plants for their mutual benefit.

The bees' antlike brothers were prevented through circumstances from developing in the same direction, but went in another, just as it often happens that human brothers, brought up in the same home, but scattered all over the world, adapt themselves to surroundings and possibilities and reach different social levels. We can always be sure that what we call a family of plants or animals is from the same ancient form, and that, again, from some still more ancient source where so many families originated before the Carbonaceous epoch.

These truths are not generally known. But the facts of geologic history will become more and more realized in spite of nursery tales from the childhood of mankind in which every thing is imagined for the benefit of man. A Swedish philosopher, Swedenborg, who flourished 150 years ago, said that bees were made to give us honey and wax; and was not wax necessary for candles? He did not dream of kerosene, gas, or electricity.

Perth Amboy, N. Y.

WASHINGTONIANS DISCUSS PROTECTION

BY J. B. RAMAGE

"The Relationship Existing between the Beekeeper and the Fruit-grower" was the subject of a paper read by Dr. A. H. Henry, of North Yakima, at the recent convention of the Washington State Beekeepers' Association. While all of the addresses were of a high order this one was especially so, bringing out a phase of the related sciences which is only lately coming to be fully appreciated. He was listed to address the convention a year ago, but had a severe illness at the time the association met.

The addresses, papers, and talks dealt with the range of subjects usually handled in these conventions; but especial attention was given to methods of creating good will through exhibits and of realizing upon it in sales.

The members also discussed somewhat the idea of forming a beekeepers' protective

association. There are altogether too many losing bees and honey through petty thievery. I believe we can get such an association started through a little push on the part of the members. I believe that to post notices at outyards offering a reward of \$25 or \$50 for information leading to the arrest and conviction of thieves will have a very salutary effect.

The association framed a foul-brood law which the members hope to see passed at the next session of the legislature.

The convention, the twenty-first to be held by the association, was called Jan. 6, 7, 1915, at North Yakima. The following officers were elected for the ensuing year:

President, J. B. Ramage, North Yakima; vice-president, C. W. Higgins, Wapato; treasurer, Gus Sipp, East Selah, North Yakima; secretary, S. King Cloder, Mabton.

NEW JERSEY ASSOCIATION ASKS FURTHER RESEARCH

BY C. D. CHENEY

Increased appropriations by the New Jersey legislature for investigation in bee diseases will be asked by the New Jersey Beekeepers' Association. At the convention held at New Brunswick Jan. 13, 14, action was taken to place before the legislators the need for funds in order that the State Department of Agriculture may carry on further researches into the causes of the various diseases, the conditions affecting their spread, and the methods of combating them.

The matter of holding additional summer meetings in different parts of the state was discussed. While only one summer meeting has been held annually in past years, it was suggested that four be held in the summer of 1915; but it was finally decided that two

be called, if it is possible to make satisfactory arrangements. These meetings will be educational in character, and one at least will be held in a box-hive apiary where some practical demonstrations can be made.

W. W. Case, of Frenchtown, read a very interesting and amusing paper entitled "Reminiscences." The audience was so well pleased with this production that Mr. Case was requested by resolution to send it to one of the bee-magazines for publication.

All 1914 officers were re-elected—C. H. Root, of Redbank, president; and E. G. Carr, of New Egypt, secretary-treasurer. W. Garabrant, of Ralston, was elected representative to the annual meeting of the State Board of Agriculture, and W. W.

Case, of Frenchtown, alternate. Dr. E. F. Phillips, of Washington, D. C., an honorary member of the New Jersey association, was authorized to represent the organization at the convention of the National association in Denver.

Owing to a heavy rain and wind storm during the thirty-six hours before the opening day of the convention, the meeting was not so well attended as previous meetings have been.

Hoboken, N. J.

CANDY FOR WINTER FEEDING

Some Experiments in our Machine-shop Cellar

BY GEORGE H. REA

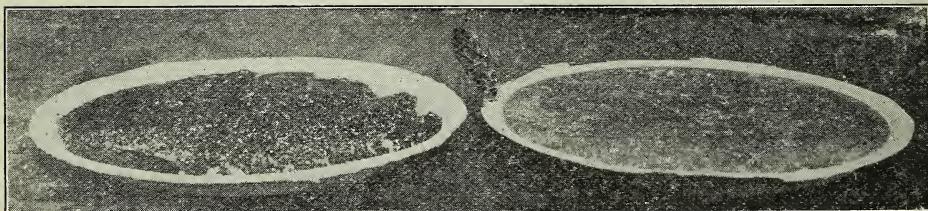
Readers of GLEANINGS will remember that about a year ago we made elaborate experiments with hard candy for feeding. (See GLEANINGS for January 1, 1914.) It was found that candy made simply of sugar and water would granulate too much. The bees would eat away the softer portions and waste the hard crystals, which would be found in considerable quantities on the bottom-board. This trouble was overcome by making the candy with about one pint of honey to twenty-five pounds of sugar. We are again testing this out in our machine-shop cellar.

On January 9 ten small colonies, of an average strength of about four frames of bees and honey, were taken for the experiment. Over the clusters, right on top of

the hard granules are thrown to the bottom-board and wasted.

On January 26 two other lots of candy were made—one with one pound of honey to twenty-five pounds of sugar, or 4 per cent honey, and the other with half a pound of honey to twenty-five pounds of sugar, or 2 per cent honey. The bees seem to be consuming both of these about equally, except that there appear to be some hard portions in the latter which the bees seem to be eating around, and may later discard.

A point to be taken into consideration is that our machine-shop cellar is extremely dry, and it is possible that in a moist cellar the harder candy might become sufficiently soft so that all parts of it could be consumed by the bees.



Two cakes of candy were placed over the same colony. One of them (the one at the left, above) contained 10 per cent honey. The other was merely boiled-down sugar or syrup. As can be expected, the candy containing the honey was taken readily by the bees while the other, up to the time the picture was taken, had not been touched. It is interesting to note the small piece of comb which the bees built on the edge of one of the plates as a result of the stimulation.

the frames, we placed two cakes of candy molded in paper pie-plates. One cake was hard candy made simply of sugar and water, while the other contained about 10 per cent honey.

As we expected, that containing the honey was rapidly consumed, while the hard candy remained untouched for several days. The percentage of honey was found to be too high, and the honey became too soft after a few days in the hive. To-day, February 3, it is just about all consumed, while that made of sugar and water is barely touched. Where the bees are working on the latter

There is no drip whatever from the candy containing 4 per cent honey, and for a dry cellar this is undoubtedly the right proportion. We do not believe it would become too soft, even in a damp cellar.

Another interesting fact is that the colonies fed with this candy are rearing brood quite freely. Observation yesterday showed brood in all stages, and the queen laying as though it were summer time. The results of this will be reported later.

In one of the colonies the brood-nest was split through the center by spreading the combs, leaving a space about two inches

wide in which the bees clustered, hanging in festoons upon the cakes of candy placed over the opening. The first examination was made on the third day after the candy was given them. A good start was found to be made on the honey candy, while that containing no honey was untouched. To our astonishment a piece of comb was found built attached to the edge of the pie-plate containing the hard candy. This comb is shown in the engraving. Now, why did the

bees build that comb, and where did they get the material? It does not seem probable that they would consume honey from the combs for that purpose. If that is true we must conclude that they consumed more candy than they needed for food, and converted it into wax to build combs to fill in the vacant space.

These experiments will be continued, and the readers given the benefit of the observations.

BROOD-REARING SUCCESSFUL WITH ALBUMENIZED CANDY

BY T. RAYMENT

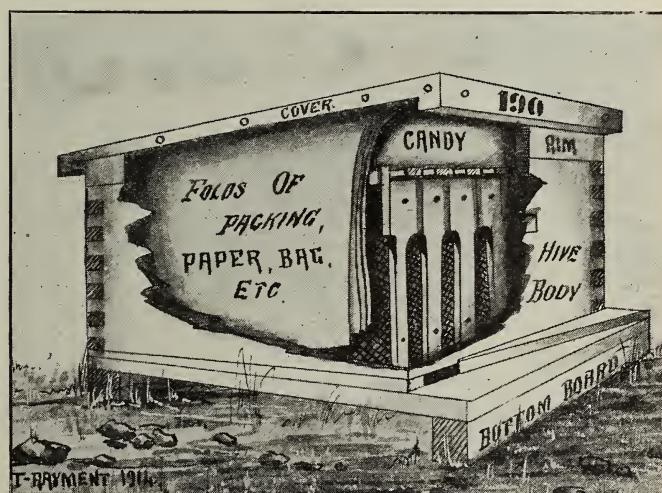
Several correspondents view with skepticism the editor's thesis of bees breeding during cellar confinement. The basis of this unbelief is rather difficult to define. If the conditions existing in the repository were favorable for the inauguration of brood-rearing, then the absence of young (not the presence thereof) should be the occasion of any wonderment.

In this far antipodean land the wintering of bees presents special problems. It is generally true that no locations in Australia call for cellar protection; but it is undoubtedly correct that the majority of our apiarists would be well advised to give the question more earnest thought. This vast commonwealth—which at times runs the whole gamut of climatic changes—experiences meteorological conditions not quite unlike those of portions of the United States.

As many are aware, the quality of the food exercises the predominating influence on insect life during the rigors of the winter.

The accumulated store of vital energy is a strong factor governing the ultimate success of the insect cycle. All life is one continuous search after that most valuable element, nitrogen; and this is especially true of the *Apidae*. When the food supply contains the maximum of nitrogenous albumen or proteid (*i. e.*, the true value of the life-sustaining portion of all food), there is, therefore, a surplus available for conversion

into eggs and larvæ. This last year during our spring overhaul (August 5, 1914), we were careful to observe the condition of certain groups of colonies that last autumn were specially fed up for winter. All the colonies are housed in single-story dove-tailed hives, eight-frame size, with solid bottom-boards and covers of one-inch cleated boards protected with galvanized metal. Each hive contained a one-year-old Italian queen (all these were the progeny of the



Candy placed above the brood-frames in a space provided by the addition of a 1 1/2-inch rim.

same mother), and about four pounds of bees. Something like sixty were wintered on natural stores gathered from Victorian* spotted gum (*Eucalyptus Goniocalyx*). A few colonies contained slabs of candy made by simply pouring boiling syrup on dry beet sugar, stirring slightly, and allowing it to set in paper molds. These were then

* One of the vast family of eucalyptus indigenous to Australia.

inverted over the frames and covered with four thicknesses of newspaper, with a final fold of sacking (see illustration). A wooden rim 1½ inches by the dimensions of the hive permitted the use of the covers described above.

Others, again, were similarly packed; but the candy was of different composition. In this case the beet sugar was boiled for one hour and twenty minutes, and some honey



During the winter the bees consumed the candy and built small pieces of new comb. In fact, the cluster passed the winter surrounded by candy stores.

was then added. When the syrup was almost cold it was rapidly beaten into a fine creamy consistency and allowed to cake in shallow paper dishes. These were then given to the bees as mentioned above.

We again varied the treatment with another group. A number of new Hoffman frames (wired as for foundation) were laid out on greased paper, and a mixture of sugar and the white of an egg was then poured in and permitted to harden. (This candy was compounded of warm beet sugar whisked up with the white of an egg (albumen) into a creamy batter, and was very similar in appearance to the icing of a cake.) These Hoffman frames of candy were placed in the brood-nests without packing of any kind.

Here are the results of our observations in epitomized form:

Group 1.—Colonies wintered on honey consumed about 9 lbs. of food, and contained a small patch of eggs.

Group 2.—Colonies on plain sugar cage consumed 5 lbs. of food, and most had a small lot of eggs.

Group 3.—Colonies on sugar and honey consumed 4 lbs. of food, and possessed eggs and brood.

Group 4.—Colonies on sugar and egg consumed 3½ lbs. of food, and built new comb into the space so made. This new comb contained eggs and brood, a photograph of which accompanies this article.

To test the egg diet in another direction we gave some of the egg candy to colonies in group 3 with the result that brood-raising progressed marvelously. Up to time of writing there is no new comb in any other hives. Except that the continental war has dislocated food stuffs we should certainly have prescribed an egg diet for the whole apiary.

We omitted mentioning that on odd days all the colonies gathered a little honey from the cedar gum (*Eucalyptus Gunnii*). Although we have tried both cane and beet sugar we have discovered nothing. The bees apparently do as well on one as on the other. I have in mind the British objections to beet sugar. In England the beet sugar was of German manufacture. In Australia it is made under the supervision of a Californian (Dyer). Would this make any difference?

Briagolong, Victoria, Australia.

COLORADO PRODUCERS DISCUSS COSTS, GRADING, AND EFFICIENCY

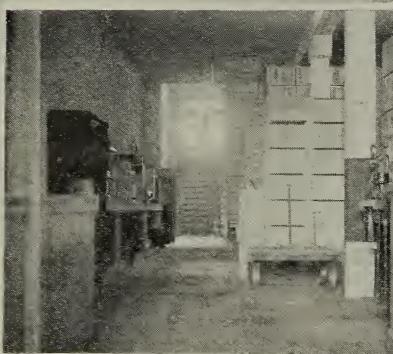
BY WESLEY FOSTER

The annual meeting of The Colorado Honey-producers' Association was held at the Auditorium Hotel, Denver, Dec. 28, 29, 1914. Some of those placed on the program could not be present, but their subjects were handled by others, and by participants in the general discussion.

The experience of a number of beekeepers in buying queens was given, and on the whole it seemed to be highly unsatisfactory;

but several admitted that they thought it should not be given up, because, once in a while, a very valuable queen is secured.

The question of the cost of producing comb and extracted honey aroused active discussion, and pencils were used by many in figuring the estimates of the different speakers. One phase of the cost concerned the depreciation that should be figured on an automobile the first year. The figures



1. Front of The Colorado Honey-producers' Association store. 2. Four of the six who keep things going. 3. Main aisle of first-floor wareroom. 4. A glimpse in the office. Mr. Rauchfuss, Mgr. 5. Third-floor (partial view) showing tinware, etc. 6. Liquefying-plant. Capacity 24 cans each 12 hours.

given by A. J. McCarty and A. C. Van Galder differed somewhat, and a short debate ensued, participated in by several others. Mr. Van Galder figured his time by the day and Mr. McCarty by the year. Mr. Van Galder has a farm that takes his time when not working with the bees, so that he does not need to figure a year's wages as does Mr. McCarty, who lives in town and is a beekeeping specialist.

Mr. Van Galder did not figure a 50 per cent depreciation upon his automobile the first year, as Mr. McCarty claimed he should. It appeared from the run of the discussion that Mr. McCarty endeavored to prove beekeeping unprofitable, while Mr. Van Galder tried to prove the opposite. As they had their own apiaries to judge by, and are both quite extensive honey-producers, I do not think a decision could be reached. Mr. McCarty claimed that, if a ten-year average were taken, his bees owed him something. Mr. Van Galder claimed a fair profit and fair wages for his time on a nineteen-year average. The bees paid him as well as or better than his farm. Here is an argument for diversified farming against specialized beekeeping. The farmer should include bees in his operations, not from a honey-for-the-table motive, but as a money crop.

The list of successful beekeepers who own and operate farms at a profit, or who are farmers and keep bees at a profit, is not small in the West.

Mr. Porter's paper, "Efficiency in the Apiary," brought out a number of points. If one has an auto he does not need a wheelbarrow in the outyard. Too many beekeep-

ers can think of only one thing at a time. If they are clipping queens they must finish that before they care for a foul colony or a queenless one, or feed one short of stores. The beekeeper should, soon after beginning work in an apiary, say after examining five hives, so size up the yard that all needful work can be attended to that day.

The grading-rules were discussed, and some changes were proposed. It was decided, however, to leave the definite changes till after the National convention in Denver, as it was thought fruitful ideas might be brought out at this meeting. It was recommended that the names of the grades of comb honey be changed from No. 1, Choice, and No. 2 to Fancy, No. 1, and No. 2 respectively, to correspond with the names of the National grades.

The Colorado Teachers' Association held its convention at the same time as the Colorado Honey-producers' Association, and Prof. Dunn of Fort Collins, Prof. Beardsley of Greeley, and Prof. Spangler of Longmont were present at part or all of the beekeepers' sessions. This goes to show that the long summer vacation makes it possible for schoolteachers to take up beekeeping for health, pleasure, and profit very nicely. Prof. Spangler has over twenty-five colonies, and I believe that Prof. Beardsley and Prof. Dunn count their colonies in hundreds.

The convention was a well-attended one, the day sessions having attendances of between sixty and eighty, and the evening sessions about forty.

Boulder, Colo.

SOME VALUABLE POINTERS ON MOVING BEES

BY J. L. BYER

In view of the fact that we are being treated to a fine series on moving bees it may seem superfluous to say any thing more at this time. But it is a subject that will stand a good deal of discussion, as beginners are constantly wanting to know about moving bees. I know this from the fact that I get a good many letters bearing on this question.

My experience in moving bees is not extensive, but I have moved them under almost all conditions. On my first attempt by train I moved 100 colonies with fixtures 100 miles; and the second trip, some 250 colonies were moved nearly 300 miles along with a full equipment of supers and other fixtures. Although both trips were made during the latter part of May, not a comb

was broken nor was there a quart of dead bees in both shipments together, so far as we could estimate.

For moving in the early spring in our latitude, if work is done at night all the ventilation I have found necessary has been provided by tacking wire cloth over the entrance. After bees have become populous, and brooding is going on rapidly, and weather is warmer, it is a good plan to screen the tops of hives with wire cloth. If the colonies are very strong, allow space on top for bees to leave the combs by having the wire cloth kept away from the top by means of strips of wood at least an inch thick—more is necessary in very warm weather. If local moving of bees for short distances is made at night, before clover

bloom, no water will be needed, generally speaking. After midsummer, when the weather is hot and hives very populous, abundance of room is necessary to allow bees to leave the brood, while water is an absolute necessity.

Fasten frames that are not of the self-fastening kind. Never take any chances on loose frames unless they are of the narrow variety and thoroughly propolized together. Possibly as good a way as any to fasten frames on top is to force with a hard-wood stick a thin wire nail through the end of the top-bar inside of the rabbet, leaving the nail sticking out a little so as to be easily drawn out again. It is not as slow a job to do this as one would think; and while there may be better ways, it is one of the easiest plans if the mover is in a hurry, and has but few tools at hand. More than once when thus situated I have used a wad of newspaper between each frame at the end, firmly pressing the wad down with the large blade of my jack-knife. Never has the plan given me any trouble.

Place on a wagon all hives to be moved, with frames crosswise of the vehicle. Most of the jolting on a wagon is sidewise. On a car, when moving by train, place frames lengthwise, as it is the shunting which causes trouble rather than side motion. When moving by train have a barrel of water at the door of each car. We moved the lot of two cars thus equipped and had no spills. The top of the water-barrel was left in place, and in its center a circle about 14 inches in diameter was cut out. For a good part of the journey I sat on one of these openings with only a blanket between me and the water, and yet I never got wet. That will show how effective it is to arrange for carrying water in this way. Our first carlot of bees was closed in with wire cloth on top with a two-inch space between the frames and the top of screen. They went through all right.

The second two cars were arranged on two plans. Part had shallow supers on top with cotton instead of wire, while the rest

were as in first shipment—covered with wire. All came through in good condition: but, all things considered, we much prefer the cotton, and would use it exclusively in shipping bees again. No, the bees will not gnaw through the cotton—something I was afraid they might do until assured by Mr. Alpaugh that there was not the slightest danger of this. Those with cotton over them had entrances entirely closed with strips of lath; and although the weather was warm there was absolutely no loss of bees. Any colonies getting the least bit noisy were promptly treated to a dash of water over the top of the cotton, and then all would be quiet.

On our last trip we used one double-decked car, even when cautioned against it by so good an authority as R. F. Holtermann. The only disadvantage we found in using such a car was that the loading and unloading were very difficult, as one necessarily had to be in a stooping position all the time. So far as we could see there was not the difference in temperature we had expected, and one lot came through just as well as the other. As a common car will take about 100 eight-frame colonies on the floor it is needless to say the double-decked car is a good means of saving work when moving a hundred or more colonies and fixtures. No crating nor decking is necessary, the bees going in one story and the fixtures in the other.

In preparing colonies for any method of moving be sure to close all cracks that bees can get out of, and then after starting you will find you have missed some. We always carry a roll of cotton batting on such trips; and as soon as any opening is seen that is letting out bees it is short work to shove in a bit of the cotton; and, once in place, it stays there.

Moving bees is at best a dangerous job. Sometimes just a little thing may help to avoid what might have been an accident or loss of bees.

Markham, Ont.

A GOOD WINTER CASE FOR TWENTY CENTS

BY ED SWANSON

It is just as necessary to have bees protected in the spring as in the winter. My bees were gathering pollen to-day (Nov. 11), which I don't think they could have done if they had not been packed. The nights are so cold that, had they been left without winter cases, it would have taken the bees about all day to warm up enough

to come out at the entrance. To-day the bees were out just as soon as it warmed up enough so they could fly. Strange as it may seem, every kind of vegetation has been dried up and frozen for three weeks, yet the bees have been carrying a lot of pollen, as I have seen by watching.

I am sending three photographs of my

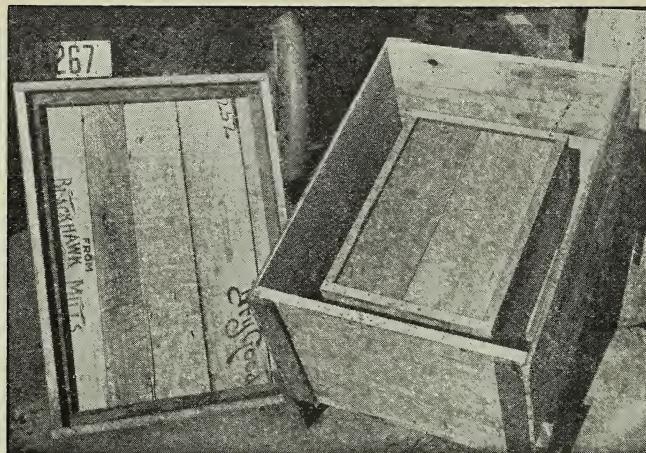


FIG. 1.—The case allows plenty of room for packing.

winter cases. Fig. 1 shows the case tipped up, giving a view of the inside, with the hive in place. The space for packing is about four inches across on the sides and ends, and about six inches on top. Beside it stands the cover. Fig. 2 illustrates the case with cover on as it looks when packed for winter.

In Fig. 3 thirty-four colonies are packed for winter (with my spring wheelbarrow in the foreground).

I use planer shavings for packing. I generally put some leaves in first, so in case there are openings around the bottom the shavings will not leak out. Now, these boxes I buy at the grocery at 10 cts. apiece, cover and all. They are just the right size the way they are. I nail strips on the bottom for the hive to stand on; cut an entrance in front, and nail some legs on.

For the cover I make a one-inch rim (just the size of the box) and nail the cover board on. Then I make another rim two inches wide, and put it on the outside of this, which telescopes over the box. Then I overlay it all with one-ply roofing. These covers I shall use as shade-

boards in the summer, as they are large enough for that purpose.

These boxes cost me, finished, about 20 cts. each, not figuring labor.

I also send a picture of my homemade saw-table which I drive with a one-horse power gas-engine, and it seems to handle it nicely. I find this saw very handy in making covers, bottoms, and hive-stands.

Another photograph (Fig. 5) shows part of my bees in the foreground, and the barn

where I keep my saw, auto, and some of my supplies in the background. The building has a cement floor, and I find it a nice place to work.

Has any one ever had experience with a trailer? Would a Ford car be too light to use with one?

Then there is another photo that shows my boy with his new wheelbarrow, loaded with a super. The little fellow says he is going to be a beeman, which I hope will come true.

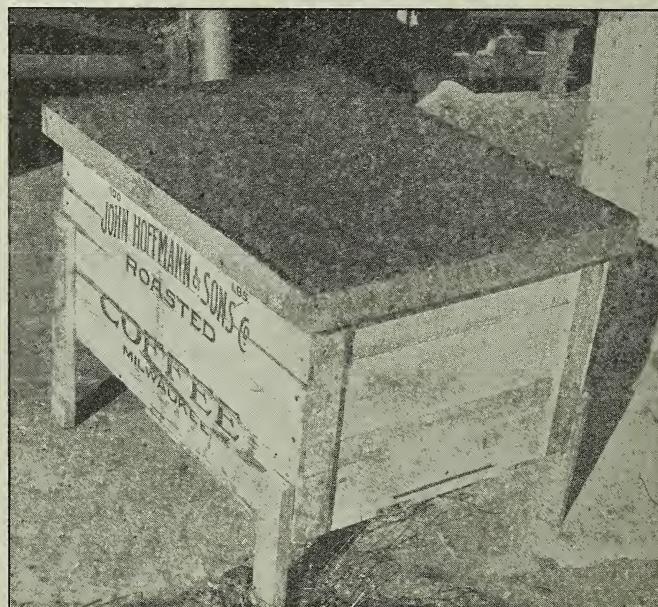


FIG. 2.—Ready for winter.



FIG. 3.—Thirty-four colonies packed.

How many of our beekeepers have cameras? I think every beekeeper should have one, as there are so many things that pictures explain better than any amount of description.

Spring Valley, Minn.

[Unless the trailer is built for the work

it has to do by some concern understanding the difficulties, the proposition is not apt to be very satisfactory. Even at best it takes considerably more power to move a given load in a trailer than in a specially constructed box, say, located back of the front seat.—ED.]

QUARRYING FOR BEES

BY C. L. SNIDER

The geological formation in eastern Washington is such that there are many holes in the rocks, supposed to have been gas-pockets formed ages ago when the world was new. As there is no timber, there is no

other place for runaway swarms to go. In starting to locate them the beeman knows that they are either on one side of the canyon or the other, which helps wonderfully, while if it were a bee-tree it might be any old place.

I lined the last swarm from an old prune orchard to a point on the third bench of rock back on the north side of the canyon. After some very strenuous climbing I found them in a small ledge about ten feet high. They went in at a small hole about as high as my head. As it was late in the fall of 1913, and I wished to save the bees, I put off taking them out until Aug. 15, 1914.

When the time arrived to begin operations I took my

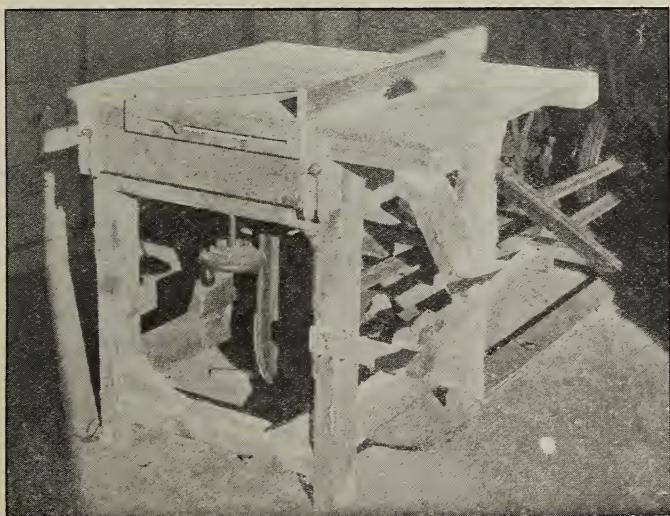


FIG. 4.—Home-made saw-table.



FIG. 5.—A large garage makes a fine workshop.

friend and neighbor, W. H. Yarwood, Jr., into my confidence; and after explaining to him that there was undoubtedly just "seads" of honey, and that the bees could not sting through more than two inches of clothing, he agreed to see me through.

We arose at an early hour; and after a drive of about eight miles we unloaded the tools, which consisted of a smoker, two bee-veils, a steel bar, a rock-hammer, and a box for the bees. After donning the armor and firing up the smoker we built a platform of loose stone at the base of the cliff.

Upon examining the cavity we could see comb and bees a short distance within, and found that the rock was seamed and could be broken away quite easily. We gave them a few puffs of smoke, just to let them know that we were there, and attacked the rock with bar and hammer vigorously for a few moments, laying bare a part of the nest. A stiff breeze was blowing directly against the face of

the cliff, and no bees were flying; neither did they rush out when we smoked them. After we reached the nest we cut out the combs and brood with a pocket-knife. The brood we fitted into frames in the box, and shook part of the bees on to the frames from the combs as we cut them out. The honey we put into a five-gallon gasoline-can as fast as we took it out.

After the comb had been removed we



FIG. 6.—His first load of honey.

found that we had but a small part of the bees, so we took a dipper and scooped out all we could reach. Then, taking the box to the top of the ledge, we awaited developments. It was not long before the bees in the hole became uneasy and began to fly up to the box. In about two hours we had fifty pounds of fine honey, and about all the bees (a large swarm), and were ready to

start on our drive home, feeling that we had had the time of our lives.

I shall feed the colony for winter and add them to my apiary. I have taken many colonies from the rocks, and the procedure outlined applies to about all cases in a general way, although I do not always get the bees, as they go too far back in the pocket.

Mohler, Wash.

THE NEW MISSOURI APICULTURAL SOCIETY

Missouri Beekeepers Incorporate and Boost Inspection Law

BY AUSTIN D. WOLFE

This will introduce the Missouri Apicultural Society, incorporated. The Beekeepers' Association held its annual meeting at St. Joseph, Mo., Dec. 7-8, 1914. Almost the first matter of business was the consideration of the report of a special committee whose recommendations were adopted. The substance of the recommendations was that the association proceed to incorporate; that officers for the Missouri Apicultural Society be elected at the proper time; and that those present sign the articles of agreement as charter members of the incorporated body, all of which was duly accomplished.

The gathering at St. Joseph was of more than usual interest. At least two manufacturers were on hand with an exhibit. Subjects of general interest, such as wintering bees, and spraying with its dangers, were discussed, with the customary differences of opinion. A. V. Small, of St. Joseph, read an unusually clear paper on shook swarming. O. S. Mullins, of Holton, Kansas, was so pronounced in his advocacy of Carniolans that he almost shook the faith of those who have it fixed in Italians. Beekeepers present who had tried Carniolans endorsed Mr. Mullins. Dr. L. Haseman, of Missouri University, Entomologist of the Department of Agriculture, spoke of the value of bees to the orchardist; and Dr. C. R. Woodson, who owns one of the big commercial orchards of northwest Missouri, spoke on spraying. At noon of the 8th, seventeen beekeepers sat down for a cosy luncheon, and had a good time together.

The members of the association jumped at once from the meeting into the preparation of an inspection law. In working up the law they had the advantage of the experiences of other states in preparing a bill. The association is now hot foot after the beekeepers of the state to secure their co-operation and their influence with a view to the passage of the bill. Its passage will

mean the preservation of thousands of colonies, and the saving of thousands of dollars to the beekeepers.

Officers of the Missouri Apicultural Society are: President, J. W. Rouse, Mexico; Vice-president, W. F. Fox, Garden City; Treasurer, J. F. Diemer, Liberty; Secretary, Austin D. Wolfe, Parkville.

Parkville, Mo.

[The proposed inspection law is very similar to corresponding provisions in the Ohio code, but deals with the matter more minutely. The Missouri association would give the inspector slightly greater room for the exercise of his own judgment, instructing him, for example, to visit diseased apiaries a second time only if he deem it necessary, while the Ohio law directs that he shall in every case make the second visit. In Ohio "three disinterested taxpayers" or the owner of the apiary must report in writing to secure inspection, while the Missouri inspector is directed to go ahead whenever disease is reported. In the former state, queen-breeding apiaries are to be inspected twice in the summer; in the latter, once. The Missouri bill stipulates the salary shall not exceed \$1300, while the Ohio law leaves this to the Board of Agriculture. Other differences are minor.—Ep.]

MR. A. D. WOLFE, NEW SECRETARY OF THE MISSOURI APICULTURAL SOCIETY.

Born in Montclair, N. J., in 1861; early in business; entered the ministry, and graduated from New York University and Union Theological Seminary; spent six years in Iowa and Nebraska; since 1896 has been in Missouri, acting variously as president of a school, librarian and registrar of Park College, and as pastor of prominent churches; got his first acquaintance with the bee when he caught a swarm in a coffee-box; fell in love with the art, and has ever since handled

the bee from both practical and scientific standpoints; reads enormously of bee-literature; keeps few colonies, but sets such a good example that his bees must work; makes his own equipment; belongs to the Missouri Apicultural Society; elected secretary in December, 1914.

His alertness, accuracy, training, education, and practical common sense make him a most valuable man for the place. His letters and records are models of conciseness, short-sentenced, and his points always easily understood.

Perhaps we ought to admire the man who tries but fails, but we don't. The man who tries and succeeds gets the applause, and such a man is Mr. Wolfe. When you meet him you recognize at once that you have met a real man—unassuming, modest, capable, and up to date. Our circuit judge, in deciding a case, said that a text-book twenty-five years old isn't of much value. The

same will apply to a man even more, because a man can be up to date if he will, but the poor old text-book can't.

Having served as secretary of the old State Association for three years, and having known Dr. Wolfe for the same length of time, I feel qualified to introduce him to the beekeepers of Missouri, and beg that each will give him all the assistance possible.

By the time this is read we shall be incorporated under the laws of Missouri—a point we have been trying to reach for three years; and the credit for its accomplishment rests with the good members of the society; and every member is a good one or he would not belong.

Now let every citizen, whether a member or not, jump in and help get our good foulbrood law through the legislature at this term, and we shall make old Missouri one of the great bee states of the Union.

Liberty, Mo.

J. F. DIEMER.

THE GENESIS OF BEEKEEPING ON THE PACIFIC COAST

BY EZRA MEEKER

One morning early in March, 1856, while at breakfast in our blockhouse at Steilacoom, Wash., a notice was handed me that four swarms of bees had been landed from the steamer just in from San Francisco, subject to my order. "Four swarms of bees?" I said in surprise. "I haven't ordered any bees." But I accompanied the young man who had given the notice; and, sure enough, there they were on the wharf singing their song I had with delight so often heard in the "States" in my boyhood days. The purser handed me a letter which, of course, I eagerly opened and read.

Dear Doc:—I send you four swarms of bees. Sell two swarms for \$125 a swarm, and keep two for yourself. BUCK.

William Buck and I had crossed the Plains together in 1852 to Bear River, where he took the road that led to California, while I bore off to the Northwest, and finally landed in Steilacoom on Puget Sound. He always would persist in calling me "Doc," because at one time I had read a little in medical books and thought of entering the profession of medicine.

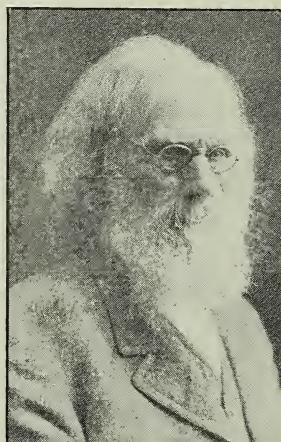
The honeybee is widely distributed over

the world; but there were none on the Pacific Coast when Buck arrived in California and I in Oregon. Buck had made two trips back to the "States," and brought out two shipments by steamer from New York and across the Isthmus, and had been very successful. So far as I know his shipment was the first honeybee west of the Rocky Mountains.

I sold the two swarms for \$125 each; sent the remainder to my claim, and by the third year had twenty colonies. This was a time before white clover had spread over the timber land. There came a season of failure of honey from the wild flowers followed by an open winter, and I lost all but two colonies.

The raising of bees and the production of honey, however, since white clover has spread everywhere, has not been so pronounced a success in the Puget Sound country as in the eastern section of the state where the alfalfa furnishes rich pasture and the colder winters keep the bees indoors until the honey supply is near at hand.

I have long since discontinued beekeeping, though I never lost my interest in the mys-



Ezra Meeker, pioneer beekeeper of the Northwest.

terious little workers. To this day the active work of a colony during the day, and the contented hum (song shall I call it?) after nightfall has an attraction I cannot describe. This fascination has always remained with me from my boyhood days to the present, though I am nearly on the eighty-four-year mark. I have spent many an hour of rest-

ful companionship with the dear little fellows, and love to think of them as friends and admire their resentful bravery in defense of the treasure garnered from the storehouse of nature in the distant fields. Who does not profit by their lessons of unselfish industry for their kind?

Seattle, Wash.

THE FALLACIES IN THE "QUEEN ODOR" AND DISTRESS THEORIES

Another Explanation of the Smoke Method of Introducing

BY ELVIN M. COLE

The "thread of the truth" that the queen gives the colony its individual odor, Jay Smith, page 975, Dec. 15, is slender and easily broken. "Why will queenless bees readily unite with another colony?" Not because they have no queen odor, but because they have no queen. Bees do not live an individual life, but a colony life, and their hopes of life center in the queen.

Robber bees are not always from nearby colonies, as Mr. Smith seems to imply, but sometimes from a distant apiary. According to his theory they should have lost their queen odor and be made welcome.

If this theory were correct, the Alexander plan of placing a weak colony above a strong one could never succeed, as the bees having the odor of the queen in the upper story must pass directly through the lower colony having a different queen odor.

The "distress" theory of queen introduction, by A. C. Miller, page 977, Dec. 15, is no stronger than Mr. Smith's theory; and its author, so far as I know, has never advanced a single reason as to why "distress" will cause bees to accept a strange queen.

In the same issue of *GLEANINGS* Mr. Miller gives us a number of conditions under which his "distress" theory fails—namely, with "cracked, warped, leaky, unpainted hives," "hives of two or more chambers," or "if much of the hive is unoccupied."

"Unpainted" hives is doubtless a cruel shot at Dr. C. C. Miller, a young but promising beekeeper of Illinois.

All these exceptions which Mr. Miller notes may be easily supplied with a fertile queen by the smoke method when we understand the real principle on which the operation is based.

Those who hold to the idea that, in introducing by the smoke method, the colony odor is destroyed and bees and queen are scented alike, are equally hard pressed to explain many things. There ought rarely to

be a failure if the odor theory is true; and it is hardly possible that J. L. Byer failed to impart plenty of smoke to his bees and queens, or that he failed to have them in distress, or that at Dr. Miller's they failed to distress a single colony, or impart to them the odor of smoke.

None of these theories explain the fact that a yellow queen may be introduced into a colony from which a black queen has just been removed, or that a large queen may replace a small one, and under conditions where the bees may see the newly introduced queen. If one doubts that bees are able to distinguish between yellow and black let him turn to *GLEANINGS*, Feb. 15, 1914, and read the article "Color Sense of the Bee." So if the "transmission of odor" or the "distress" were true, when their distress is over, or the odor of smoke has passed away, they would be aware that the queen in the hive was a stranger.

When a colony is prospering, but little precaution seems to be necessary in introducing a fertile queen to a colony from which a queen has just been removed. The odor of a laying queen is usually sufficient, and I believe it to be the only odor that plays any part in queen introduction; also that it is a protection to her in any form of introduction.

But if the harvest is slack, or robbers begin to trouble, some method of introduction must be employed. One such method employed is known as the smoke method, sometimes misnamed the "Miller smoke method," and I believe most failures when this method is employed are due to following too closely A. C. Miller's instructions, as he seems to have failed to grasp what he calls the "basic principle" of the method.

If instead of closing the hive a certain length of time, as advised by Mr. Miller, you will follow G. M. Doolittle's plan and depend on your ear to guide you, and introduce the queen when you have the bees roaring loudly, you will meet with reasonable

success. Mr. Doolittle says in "Scientific Queen-rearing" that he lost less than one queen out of fifty by this method. I believe the following to be the true reason for the acceptance of the queen when the smoke method is used.

The smoke has demoralized the guard, and the queen enters safely. You have caused the entire colony to load up with honey; and when their fright has passed away they are not inclined to make trouble. The fertile queen is protected by her odor. Most vital of all, you have caused the bees to search for their queen in order to protect her, and they are aware that she is missing.

How quickly they become aware of her loss is made plain in Langstroth Revised, page 264. "When she is taken from them under circumstances that excite the whole colony we can easily see how they find it out; for, as a tender mother in time of danger is all anxiety for her helpless children, so bees, when alarmed, always seek

first to assure themselves of the safety of their queen."

When the smoke method is properly applied you have introduced her by demoralizing the guard; the bees are filled with honey; they have missed their own queen, and a fertile queen is in the hive. Now, why will she be accepted? Self-preservation! Why should they destroy this fertile queen and risk the life of the colony in raising and mating a virgin? Nature would forbid this risk at any time except under the impulse to "increase and multiply."

Editor Root touched the button when he said "Under-smoking or over-smoking may lead to failure." Take your time to do the work, puffing a little smoke along the entrance; keep every guard-bee back; gradually bring the colony up to a good loud roar; give them time to fill up with honey and miss the old queen, then turn in the new queen and nature will do the rest.

Audubon, Ia.

QUEEN ODOR AND BEE BEHAVIOR

BY S. G. CROCKER, JR.

While I agree with Jay Smith on a good many points in his article "Colony Odor of Bees Traceable to the Queen and to the Queen Only," p. 975, Dec. 15, 1914, I have seen phenomena which seem to point to something besides the queen odor as the source of colony identity. I think the actions of bees in entering what they know is a strange hive has a good deal to do with the conditions observed.

I have had a double hive with a queen in top, and another in the bottom, the body divided by a wire screen with an entrance to both bodies separate. I have taken the queen from the bottom hive and put the queen from the top hive in the bottom all at one operation, and the bees did not seem to know the difference. Now, why don't the bees note the difference in queen odor and ball the queen?

I have had one hive standing on top of

another on account of a lack of space and communication between them. I have removed the top hive to work on the lower one, and all the bees that came out of the hive when I jarred it, as well as those that came from the field, have settled on the frames of the lower hive and gone down among the bees without the least fighting.

When these bees think they are entering their own hive, and show no fear, they are not molested. I think that the behavior of the bees is nearly as important as the odor of the queen.

Roland Park, Md.

[Jay Smith gives room for additional ways bees have of detecting members of another colony in his statement, "There may be other means which enable bees to recognize bees from another colony; but I believe the queen is the main factor."—Ed.]

A MODIFICATION OF THE MARCHANT PLAN OF TRANSFERRING

BY FRED J. CARTAN

For the past four years I have been using a system of transferring from box to movable-frame hives similar to that of Mr. Marchant, May 1, p. 345, and without a single exception I have been entirely successful. It matters not what the size or shape the hives are from which I wish to transfer the

bees; for should the old hive be narrower I nail a strip to the side, making it equal to the width of my hive. If wider or longer I reduce by covering part of the opening.

I use a divisible hive, 5 $\frac{5}{8}$ inches deep, outside dimensions 16 x 20, ten frames, usually two bodies for brood-chamber, super

and brood-chamber interchangeable. I run for extracted principally, and use queen-excluders on all hives.

Four years ago I bought 28 colonies about six miles from my apiary. They were in all kinds of hives; but the greater part were in the old Simplicity eight-frame in poor condition. I wished to transfer them to my hives, leaving them where they were, as an outyard. It was the middle of April, and a good deal of honey was coming in. I knew it was "some job" to transfer in the old way, for I would have to work alone, and the former owner had hived his swarms on empty frames, using no foundation, and the bees had built the combs across many of them. After thinking the problem over for several days while I was getting my hives hauled up, I decided to try putting my hives on top of the old ones, letting the bees work into them.

It was and still is my belief that brood-rearing will go forward much faster if the new hive is placed on top rather than below the old hive, for there it receives the heat from the bees and brood. It was my observation and belief that the bees would remove the honey from the old hive below to the new hive above after the brood-nest had been established in the new hive, and would not store any incoming honey in the old hive.

For the factory-made hives I cut a strip 1 x 2 x 20; fastened two small brackets to each, and, after giving a little smoke at the entrance, nailed one to the side of each hive flush with the top. I then pried off the old cover and set one of my hive-bodies on top, each frame filled with full sheets of medium brood foundation. Over my frames I use a super-cover, bee-space above and below; on that a tray two inches deep, burlap bottom, filled with planer shavings; and, last, a telescope cover covered with galvanized iron. I use the tray so that the top of the hive will be the warmest, causing the moisture to condense on the sides and ends, where it will run down and out of the entrance.

After arriving at the yard it took me less than half a day to fix up the 28 colonies. There was no mess, no stings, no interruption to the workers, for they were working as freely as ever when I looked at them after eating my lunch.

Two weeks later I again visited the yard and found the bees working heavily on soft maple, from which they usually gather much surplus, there being many trees, and very large ones, of this variety in my vicinity.

Upon examining a colony I found most of the foundation drawn out and filled with

honey excepting a half-moon-shaped space in the center of several of the central frames, and in some of these I found eggs. I immediately lifted off the hive-body, now acting as super; put on a 16 x 20 queen-excluder, and set the super back on. With the smoker I then drove the bees down through the excluder, lifted off the super again, and there, trying to follow the bees, was her majesty. Then I felt sure the system would work.

After replacing the super or hive-body carefully back in place, so as not to injure the queen, I proceeded to work the remainder. Distributing the excluders one to each colony, I lifted off the super without disturbing the covers; then put on the excluder and replaced the super. This took me less than an hour. When I left, each colony had a queen-excluder between the super and brood-chamber.

About a week later I again visited the bees and examined each colony. In every super, excepting five, I found brood and eggs, thereby proving I had the queen above the excluders. From these five I removed the excluders and covers; put on top a wire screen with a two-inch rim that I use for moving bees; smoked the bees, and drummed them up into the super. I then replaced the excluder, drove the bees below, and found the queens of all five, thus leaving the entire 28 queens above the excluders.

On this trip I gave each colony the second body with full sheets of foundation. Later, as the flow from vine maple came on, which is our greatest surplus-producer, I gave them a super with excluder below; and, still later, more supers as they were needed. I did not disturb the old hives until some time in June, when I swung my hives off the old ones on to their new bottom-boards and removed the old combs. I found them dry, and clear of every thing excepting a few cells of old pollen, all brood hatched, all honey removed above, and all drones gone. In the five which I had to drive I found more than an abundance of drones, which I trapped and killed.

From these colonies I secured a good crop of honey and one swarm. They were not interrupted in their work, and the transfer caused very little trouble. They were requeened the following year. Since then I have bought several colonies each year, and have transferred them in like manner with perfect success. As soon as I find eggs in the new combs I slip a queen-excluder under. Sometimes I drive the bees down at once and see the queen; at other times, if I am busy, I look for eggs a week later. The great point is, the bees are not interrupted

at all in their work. They store above until the queen is caught above the excluder; and then when the brood-nest is re-established they move the honey from below. I usually leave the old hive in place at least thirty days to be sure all honey is removed.

Last year one of the colonies I had purchased and transferred in this manner gave

me 90 pounds of surplus (extracted), and one shook swarm, both coming through the winter in fine condition. In fact, this colony did as well as the best I had. One should choose a warm pleasant day to catch the queen at work above. Any time between ten and two o'clock will probably be best.

Corvallis, Oregon.

A FINE DAY IN SOUTHERN NEW BRUNSWICK

BY L. T. FLOYD

We placed our bees in the cellar Nov. 15, plentifully supplied with stores, consisting mainly of aster honey. We made an examination on Christmas day, and found that the fronts of the hives had a few spots of dysentery. On January 7 it rained all day, taking off what little snow was on the ground. The temperature rose to 50 degrees. On the morning of the 8th, at daybreak a thick fog hung over the valley, with a slight breeze blowing. The mercury stood at 29. The fog cleared about 11 o'clock, and the sun came out warm. In the cellar we found the bees noisy. There were more spots on the fronts of hives than we had seen in four years.

At 11:30 the thermometer had risen to 40, and while we took out one hive and placed it on its summer stand it seemed too cold for the bees to fly. At noon the thermometer showed a temperature of 45. A trip to the orchard showed the bees in full flight. We hustled to the cellar and carried our twenty colonies to their summer stands as fast as we could. We pulled off the covers

and let the sun shine on the frames and bees, giving each hive a light kick or two before we left it. By the time we had them all out, the thermometer registered the maximum at 48.

We had an hour and a half of this kind of sunshine, and the orchard was well "sprayed," I can tell you. The way those bees enjoyed that hour and a half repaid us well for the work of carrying them out. After they had had a good flight they cleaned the few dead bees, cappings, etc., off their bottom-boards, and by 4 o'clock we had them all back in the cellar again. Since that time they have been as quiet as I ever saw them.

This divides the winter pretty well for us, as we generally get them out by April 1. We think these bees would have been in very bad condition before that time if they had not had this flight. We had no trouble other winters; but in previous years they generally had a good part of their stores in clover honey. Clover failed us in 1914.

Woodstock, N. B.

OKLAHOMA BEE-LAW

BY N. FRED GARDNER

At the time of writing this article there has been introduced in the Oklahoma legislature a bill drawn along the lines advised by the Bureau of Entomology, U. S. Department of Agriculture, providing for the inspection of bees and the necessary regulations to compel the treatment and destruction of all diseases.

This bill places the authority in our State Department of Entomology, and does not create any new offices or departments, therefore the expense would be very small and only such as would be required in actually doing the work.

There has already been some trouble with foul brood in several parts of the state, and the need of the police power in this bill has already been felt. Space will not permit the printing of the bill here; but there are sure-

ly many readers of this journal in Oklahoma who keep bees and understand the importance of such a law. They surely know of the expense in many of the other states in fighting the disease after it had gained a foothold.

This is the strong argument in getting a law at once, so bee disease may be controlled cheaply before it causes a serious loss in Oklahoma. If this work is begun in time we may be able to keep the state practically free from disease.

It is not known just when this bill will come up for a vote; but if you are interested, write your state senator and representative at Oklahoma City at once, urging them to support House Bill No. 294 by Lemon.

Geary, Okla.

Heads of Grain from Different Fields



The Backlot Buzzer

The kind-hearted lady whose gardener borrowed a hive to save a swarm of bees that lit on her rose garden last summer came over here all excited this morning. She found a dead bee on the running-board.

Is It Disastrous to Disturb Bees in Winter?

Some time ago I noticed that one beekeeper said he had lost all his bees by disturbing them in the winter; but I am of the opinion that, unless he was very careless, the loss of the bees was due to some other cause. Several times I have had occasion to disturb bees in winter, but so far have never had any bad result follow it. Of course I took care to go at it with as much care as possible.

One winter I wished to transfer about a dozen colonies from box hives to frame hives, and I succeeded in doing so without any loss. I wished to get them in shape before brood-rearing commenced, as I do not like the idea of transferring when there is much brood in the hives. I waited till the temperature rose to 45 or 50 degrees. Then I moved the hives to one side, and set the new hive in its place. Then I pried the old hive apart and took the straightest combs, tied them in frames, and when I got three or four frames fixed and placed in the new hives I shook all the bees out of the old hives, and filled out the remaining frames. The bees would cluster again before night; and even if it grew colder there was no bad result.

As a rule it is not safe to handle bees when it is too cold for them to fly; but I have done so without losing more than a few which flew out and got chilled. A few times I have had either to feed in cold weather or lose some bees; and when the weather did not happen to warm up soon enough I would open the hive and remove some of the frames till I got to the

cluster. Then if possible I would put in a frame of honey or take one of the empty combs and pour in as much syrup as I could. I would place it next to the bees and close the hive as soon as possible. I even introduced a queen to a queenless colony in the middle of winter, and it worked all right.

Stonecoal, W. Va., Jan. 18. W. C. MOLLETT.

Death of Prominent Massachusetts Beekeeper

In the Jan. 1st issue one more name should have been added to the list of prominent beekeepers who passed away during 1914. Franklin James, of New Bedford, Mass., met an untimely death Sept. 28, at 45 years of age. He was a carpenter and builder by trade. While working upon the roof of his own house, by some misstep or loss of balance he fell 35 feet to the ground, striking on his head and breaking one rib which punctured his lung. He lived 39 hours, and died without regaining consciousness.

Mr. James left a wife and three children—a daughter about 17 years of age, and two younger sons. He was an enthusiastic beekeeper, and a member of the Worcester Co. Beekeepers' Association. At the time of his death he had about 75 colonies of bees, most of which he kept in an outyard at Middleboro. A few colonies he kept at his city residence in New Bedford. He had planned to make increase to about 100 colonies.

Only two weeks before his death he had a large and fine exhibition of honey and wax at the Southern New England fair held at Lincoln Park. He often came to my home—the last time about a week before his sad and untimely death.

North Westport, Mass., Jan. 14. J. M. LEWIS.

Natural vs. Artificial Passageways

Upon the question of cutting horizontal openings through the tops of frames I quite agreed with the editor, page 1000, Dec. 15. Now, the first thing I have to say against this method is, I should think the bees in the fall would fill up these crevices with propolis to such an extent that it would be practically impossible for bees to pass through them.

Those using the super covers, such as are sold regularly with the Porter bee-escapes, know that there is a half-inch space between the frames and board. These covers can be furnished by dealers with no space cut out for the escape at no additional cost. Those who wish to try Mr. Borden's method can do so in this way without mutilating their frames, and I would advise them to do so before cutting holes in the top-bars. Another advantage of using these boards is that a half-inch space is left, as I said before, between the tops of the frames and the board; and this space, being clear, cannot be filled with propolis.

Why not be content to let the bees cut their own passageways through the comb, as they will do in spite of fate? You can rest assured that by this method they will cut no more than they want.

LEWIS L. WINSHIP.

Enthusiastic Praise for Biennial Yellow Sweet Clover

Referring to the article by F. W. Van de Mark, page 937, Dec. 1, I should like to say that I got first prizes on biennial yellow sweet clover, butter, and honey at the fairs hereabouts, and against all odds, and will receive a diploma for yellow-sweet-clover hay. I have cultivated yellow sweet clover 33 years now.

Bees will not touch any thing else when my clover is in bloom. German and Austrian experts have

visited me, who claimed that it would have been incredible to them if they had not heard the noise and smelled the honey in my meadow when it is in full bloom. I have about 100 acres in yellow biennial sweet clover.

When I began to experiment with it every one said my farm had gone to the dogs. It frightened me somewhat, as it was so dazzlingly yellow, and all volunteer. If it had been white sweet clover, which grows eleven or twelve feet high, I should have been ruined. But mine grows about three feet high, and it is not as hard as wheat straw when ripe. Every thing eats it.

I am not a beeman, but furnish others much honey. One German claims a medium colony made 45 lbs. of sweet-clover honey in two weeks six miles from my meadow. I say rely on biennial yellow sweet clover. It is the best we have ever heard of or seen.

Sturgis, S. Da., Dec. 18. JOHN FREDRICK.

Defense of the Ames Bottom-board

In Heads of Grain, Jan. 15, 1915, "Subscriber" says the Ames bottom-board for four hives is faulty because, when the colonies are strong, the weather very hot, and a sudden check occurs in the honey-flow, the bees will "scrap" with their next-door neighbors.

Now, is it not the custom of most beekeepers to set their hives in pairs? While my bees are set four in a cluster they are really in pairs, for two face east and two west. Will they scrap more on these bottoms than on single bottoms set in pairs? Certainly not. I have had bees on these bottoms for several years, and never had any scraps from such a cause.

As for young queens returning to the wrong hive, that is possible under any arrangement one may use. But how often will they mistake right and left? So far as I know they never do.

As for removing cleats and placing them at the edge for summer and back to the center for winter, such work is useless, and useless work is what I am trying to get rid of.

It would be far better to use a single bottom-board for each hive on top of a plain platform, which would be the bottom of the case.

Peninsula, O. A. C. AMES.

Wheat Shorts and Candy in Place of Pollen

I have been using common wheat shorts as a substitute for pollen, and I think it is the best I have ever heard of. I have given every suggestion a trial.

My candy is made along the lines of the Good process. I use honey and granulated sugar until the mass is thick enough to knead like soft dough. Finally I work in the shorts, leaving some on the outside of the candy to prevent sticking the bees and the frames.

I lay between half a pound and a pound on top of the brood-frames. The bees will utilize all, none will be stuck up with it, and no candy will be left on top of the frames.

This quantity of feed is enough for an ordinary colony for two weeks. More should be used as needed.

MRS. S. C. THORNTON CROMWELL.

North Yakima, Wash.

Pear Blight Not Traceable to Bees?

As to bees and pear-blight, page 974, Dec. 15, 1914, I would not maintain very stoutly that bees are responsible for blight-infection getting into the pear-blossoms, for I am not convinced that they are. However, that the infection does get into the blossoms is undeniable. Possibly the ants carry it there, and doubtless they and other insects carry it from blossom to blossom; but after it is in the blossoms,

to say that bees are not responsible for carrying it from blossom to blossom is absurd, except where there are no bees. The nectar in an infected blossom quickly becomes an active blight-virus; and no insect, bee or other, can eat from an infected flower and then from uninfected blooms without transplanting the disease. No puncturing of the flower is necessary, as the nectar itself is a highly susceptible culture medium (Burkitt, University of Illinois), and the infection readily transfers itself from the nectar into the tissues of the blossom.

Carthage, Mo.

BENJAMIN C. AUTEN.

Finds Bee-hunting Profitable

My experience with bee-trees I believe confirms the statements of Elias Fox which he made in his article on page 32, Jan. 1. Late in August, 1913, I transferred a hybrid colony from a tree, wintered them in a cellar with my other bees, and last summer secured two colonies increase, not to speak of 75 lbs. of extracted honey from the parent colony.

Last October I captured a fine colony of three-banded Italians. A few of them showed four bands. Now while I have them nicely tucked away in my cellar I am looking forward to better returns from the Italians than I secured from the hybrids, if weather conditions prove as favorable.

Beginners and those who are not thoroughly schooled in the art of handling bees would be likely to have this performance end in utter failure.

Elroy, Wis.

CHARLES SHELDON.

Successful Wintering on Aster Honey

Hurrah! the bees got a good fly yesterday, the first since early November. They show no dysentery, and have nothing but aster honey. They seem to be in fine condition.

Last year my bees wintered on aster honey and came through in fine shape, though they were not confined more than three weeks at a time, as compared with the recent nine weeks' confinement.

I had the finest aster honey this year I ever had. It beat clover, both in color and in flavor.

Underwood, Ind.

RALEIGH THOMPSON.

Comb Honey Fumigated with Moth-balls

Last year we sold some comb honey to a number of different stores; and after they had disposed of this consignment to their customers they received complaints that the honey had a bad taste and smell. We investigated and found that the honey was some that we had bought to meet the demands of our trade. It had a peculiar taste and smell, similar to tar and moth-balls.

Cleveland, Ohio.

J. C. ZABOR.

A Warm Day in Winter

BY GRACE ALLEN

This must be Spring's own day of days,
The earth looks up in mild amaze;
The sun is warm—soft wind blows
From out the mystic Land of Rose
Where days to come in spring lie bound.
This day our gallant Winter found,
And loosed her bands and set her free,
And frolics with her merrily.

And here within her magic glow
Our hives are gleaming in a row.
Out fly the bees from every hive—
"Alive!" I cry, "they're still alive!"
I kneel beside each narrow door,
And then my heart sings out no more;
For some are flying overhead,
And some are dragging out the dead.

A. I. Root

OUR HOMES

Editor

Give us this day our daily bread.—MATT. 5:11.

"THE GREAT ARMY OF UNEMPLOYED,"
CONTINUED.

There seem to be two great classes of people in this world of ours—those who work for somebody else, and the "somebody else" who employs people, or who sets people to work, and pays wages or salaries. We frequently hear it said of some one, "He is a good man to work for some one else, but he seems to have a poor faculty for working for himself." In other words, he needs a "boss" to tell him *what* to do and *how* to do it. Of course there are also many who belong to both classes, more or less. These good people "work out," when wanted, and work at home when no one seems to need them. Farmers and gardeners belong to this class largely, and we might say, also, carpenters, masons, etc., especially in the small towns and villages. This latter class also very often *hire* help occasionally. Farmers who exchange or help each other come under this class, and I am sometimes tempted to think these accommodating "neighborly" people are the very best folks in the world. As the working people greatly outnumber those who hire great numbers, it would seem naturally as if the latter would be held in great esteem as benefactors of the public at large; but it saddens one to think of the strikes, and even bitter warfare, that are almost always going on of late between capital and labor.

Another thing might be mentioned here. There are many men—yes, and boys—who work for wages until they get a little ahead, and then start business themselves, gradually employing help. Why, the largest part of our great business men started life on a farm, and also, as a rule, started as poor boys; and this fact suggests what some of you may have already guessed, that I am once more going to advise everybody to "make garden and keep chickens in the back yard"—that is, of course, in place of being idle, and belonging to the "great army of unemployed."

It has occurred to me that a little of my experience here may be helpful. I was weak and puny in childhood, as I have told you. My "pipetem" arms and legs were a standing joke in that merry family of seven*—three older and three younger. I was not only weak and frail in body, but I was slow to "catch on," believed every thing

anybody told me, etc., also bashful and timid. I mention this because my story may be helpful to other timid boys and girls. Every winter I had a recurrence of my early lung troubles, and I had such spells of coughing I used to carry in my pocket some pods of the wild lobelia to chew when the cough was bad. When the lobelia produced a slight nausea the cough let up.

I am glad to remember I always wanted to go to school; and, even if I was tormented by the big boys, the "schoolma'ams" were always my particular friends. They seemed to take the place of my good mother. I remember one time when the six children, and perhaps father too, were laughing at my credulity, queer ways, etc., that mother said, "Now, you just mark my words, and wait and see if Amos doesn't do as much in the world as any one of you." And the good faithful mother worked hard to make her prediction come true. On account of sickness and some other troubles there was a time when it was a little hard to provide for that family of nine (including the parents); and to make ends meet mother begged for a garden, and chose me for her helper. This brought me in touch with the seedsmen and seed catalogs of that early day; and very soon mother and I had the finest garden in the neighborhood. Father, although he was a fair carpenter, had a strong inclination for farming; and when I was about a dozen years old we all moved back to the farm in Medina Co. in spite of protests from the rest of the family. I wasn't a success on the farm. I was too frail and weak, and didn't seem to catch on to big fields and horses and cattle. One spring day, at dinner, mother asked if she could have Amos to make garden. Father replied, "Yes! take him and keep him as long as you like, for he doesn't 'earn his salt' out in the field." This, of course, was said as a joke; but mother quietly gave me a look that I understood. Our garden prospered as gardens made by mother and me *always* did. Perhaps father's conscience troubled him a little, for he manured and fitted our ground in fine shape, and in due time that garden and the chickens furnished fine dinners for the men who worked in the fields. Mother was waiting her chance; and one day after all had finished an excellent dinner she said:

"Father, can't you now take back a little of what you said about Amos not 'earning his salt,' etc.?"

I distinctly remember the good-natured

* In spite of my frail constitution in childhood I am at 75 strong and well; and of the seven, only one brother and one sister are left.

smile as he replied: "Yes, I take it all back, and more too; for I really believe that just now he is the most profitable man we have on the farm."

I hope the above may be a good lesson not only for fathers and mothers, but for boys and girls who are good for *some* things and not for others. You wouldn't think from the above that I was the sort of chap that would ever hire help by the dozens or hundreds, would you?*

It was not until I was grown up, had a family, and GLEANINGS was started, that I had any serious thoughts of hiring help for any other reason than to help *A. I. Root*. I have told you of meeting the young preacher, Rev. A. T. Reed. Well, he preached a boyish sermon about working for *Christ and humanity* that made my heart bound at the thought of standing by his side and working *with him* for poor needy and hungry humanity. In a prayer meeting not long after, I mentioned the matter of giving work to those in need. I have told you about one young girl whose mother told me she "wasn't a mite of use" in the home, and how this girl later on took charge of the subscription list of GLEANINGS, etc., but I did not tell you of how, in answer to my prayers, I gave work to almost the whole town—fathers and mothers and children. When our brick store that held the windmill was full of workmen, upstairs and down, we had a lot of children in the yard back of the store using boxes for seats and tables, nailing up small work, making queen-cages, etc. A friend came along one day; and after looking through the busy factory he came among the juveniles, out in the open air.

"Well, I declare," said he, "this must be what one would call 'the little end of the horn.'"

A prominent business man said a few days ago, "The first work I ever did was for *A. I. Root*, and I worked for *three cents an hour*."

I now recall that I started the schoolchildren at 5 cents; but some smaller ones who cried because they couldn't have "a job" I set to work at 3 cents.

* When I first began waiting on Mrs. Root, a relative of hers, and a very good wise woman, remarked to Sue that she feared I would never have "vitality" enough to support a wife. That word "vitality" sort o' "stuck in my crop," and I said, "Sue! we'll see about that," and I think the remark did me good. When I began to realize that I should likely be "handicapped" for life in the way of health, I began daily bathing, etc., and studied the best authorities in regard to building up a good strong constitution. This relative, years after, when she was left a widow, made our bee-veils in her own home for many years, and I fear no one has ever made them since her death with such painstaking care as she did.

Since laws have been passed prohibiting "child labor" I have often felt that they are overdoing the matter. Many children would be far better off busy at work, especially in the open air, than running the streets in idleness.

In order to give as many of the needy work as possible it became a study as to what we could make in Medina instead of sending off to buy it; and I soon had a carpenter-shop, a blacksmith-shop, a machine-shop, printing-office, tin-shop, etc., and thus I was able to employ all kinds of help, each one working at his own trade, and all this directly or indirectly for the bee business. I even went into our county jail (as you may remember) and took the boys who would much rather do *real work* than to stay there in idleness. Had I done all this to *make money*, and get rich, instead of lending a helping hand to humanity, I could not have consistently used my little prayer, "Lord, help," as I did all along.

Let us now pause a minute. A good kind friend has suggested that Edison (see p. 959, Dec. 1) could have done just as much for humanity if our Government had owned his plant; and also that, if intoxicants were sold to the people at *bare cost*, so there would be no money in the traffic, the *saloon* business would die at once. In regard to this last suggestion, if I am correct, the "dispensatory" system was right along in that line; but it soon developed there was not only intemperance but shameful fraud almost as bad as before.

In regard to Edison and others like him working for the Government, I shall have to confess I do not understand just how it could be done. Those who have written me, if I have got it right, suggest that every workman should have just what he needs and no more, and high-priced salaries are to be done away with; for Uncle Samuel is to own every thing, and there are to be no more either rich or poor. This condition *may* come to pass in the "kingdom of heaven," but I have little faith that it ever will here on earth. If humanity could not own and control patents, big farms, great factories, etc., I greatly fear that, without the incentive of *ownership*, little would be done.

As might be supposed in employing so many people, I was often short of funds; but I made it a Christian duty to pay off all every Saturday night; but to do this, other bills for stuff often had to wait. At one time when I was pushing ahead and branching out almost recklessly, a good friend in our Medina bank wrote me a letter. A good many old heads in business were predicting disaster ahead of me, and

this friend asked me to consider not only what such a thing would mean to my friends, but to those who were beginning to have faith in God and his promises to his children, for all knew I was praying daily for God's guidance.

I thanked "Robert" for his kind plain letter, and then added, "To show you how in earnest I am in my thanks, just watch and see how I am now going to *pile up* something against a 'rainy day.'"

Now let me explain that my good pastor, Rev. C. J. Ryder, had been talking with Robert about this very matter before Robert wrote me that letter; and some time later I got a letter from Dr. Ryder, with congratulations, saying Robert had written him I had \$10,000 in the bank, and all outstanding bills paid in full.

I give the above incident to show the great need—yes, almost the *necessity*—that one who employs *must* have some ready cash ahead. From that time forward I found out the great advantage of having some money ahead for emergencies.

Now a word in closing, to the unemployed. First, "get busy" at something. If no one needs you, get busy at home. Cut down expenses in every direction. Run errands; do every thing yourself. Make the things you need; improve your place; your home; stop the outgoes.

Second, cut down the expense of your "daily bread." I have made little reference to our text; but we are coming to it now. Mrs. Root wanted some graham flour. We usually grind it, as I have explained, from the wheat we brought from Ohio; but that is so near gone I bought some. They had it only in fancy pasteboard packages at 25 cts., and the packages contained only 44 oz. of flour.

May the Lord be praised for the recent law compelling a plain printed statement of the amount of food placed in either tin can or pasteboard package. Well, 25 cts. for 44 oz. will be at the rate of about 9 cts. per lb., and this package was put up when farmers were getting probably about 90 cts. for their wheat. Cost of wheat, 1½ cts. per lb.; and graham flour, which should contain every particle of the wheat, is 9 cts. per lb. How is that for "profit"? Since then I have found some "whole-wheat flour" at 5 lbs. for 25 cts. Now, this is not all. This fancy package of graham flour, with reading in fancy letters all over it, telling of its wonderful "superiority," does not compare

with the flour from our little mill from the wheat we grew ourselves in Ohio. The graham flour is only one among hundreds of illustrations. If you are out of work, and the matter of "daily bread" begins to trouble you, steer clear of "fancy packages" of food. Get a little mill, or use your own coffee-mill. (You will be far better off with the *wheat coffee*.) Hunt up some good wheat and corn. Get it of the one who grew it if possible. Make shortest *possible* cuts from "producer to consumer" in all the food you use. As soon as spring opens, make garden and thus take your "daily bread" straight from the loving hand of "Our Father who art in heaven." The same with chickens. If you can scrape up enough to buy a laying hen you can commence this day. If you live as we do in the South, you can plant seeds every day in the year. Save the leaks; make short cuts; and when you come to ask God's blessing at the breakfast-table you can, with a clear conscience, say, "Give us this day our daily bread."

THE FLORIDA REDBUG.

I have several times mentioned the *Florida Grower* as a periodical that every one interested in that State should subscribe for, because it really *does* tell "the truth about Florida." Now read the following:

Can you tell us through your columns what to do for the "chigger," or "red-bug," that pesters us all during our stay, the one drawback to our visit in Florida? I'm not afraid of any thing else that I can't see; but this redbug works at night and keeps us awake.

Mrs. G. W. B.

Answer.—The redbug, or chigre, is certainly a pest wherever it is found, and I discovered it in Illinois and Ohio long before I came to Florida to live. There are people who haven't the slightest acquaintance with this little villain, even though they walk beside those who are in an itching agony, and the reason for this I am not able to suggest. They have always bothered me more or less, but I find that I am not poisoned by them as I was in my early introduction to them. No doubt one becomes vaccinated, as it were, with their poison, and in the course of time enters the ranks of the immune. I know of no infallible specific against their attacks, but I can give various remedies that have served me and my friends in the past, and each is more or less efficacious. As a means of protection before going out in the grass, rub the feet and ankles and well up toward the knees with a highly saturated solution of spirits of camphor. This is bitter, and they must sample this before they can puncture the skin, and often they back out rather than investigate further. Listerine will sometimes prove a protection, and so will kerosene and bacon grease. The latter two are not pleasant remedies to carry about on one's person, but neither is assafetida, and you remember how we once stood for that obnoxious odor to protect ourselves from smallpox. Bacon grease and kerosene are godly things compared with that. If you find yourself in possession of the little savages the bacon grease or kerosene will give them a death blow about as summarily as anything I know. Let

* Yes, the fancy package *did* contain also a coupon; and when you got a lot of coupons you could "draw" a wonderful "prize," etc. *Gambling*, in the matter of "daily bread"! Is that the way to *reduce* the "high cost of living"?

this be followed by a very hot bath. If one has the luxury of a bath-tub in the home, a vigorous scrubbing with a stiff brush in water as hot as can be borne will destroy those that have not yet buried themselves in the flesh. If the deed is done, then one can only spit the itching spots with camphor, alcohol, or ammonia, and make the best of it. You'll get over noticing them after awhile, which will console you more or less until that happy time arrives.

Before I saw the above I had been wondering if one could ever become really immune to redbugs the same as he does to stings of bees. My experience does not quite agree with it. If, however, I could keep in a beaten path and avoid brushing against weeds and palmettos back in the woods I would not have very much trouble. Sometimes something comes up when I am in a great hurry to get through the thicket, and

I take my chances. Then I am troubled by redbugs. If, however, I should rub my feet and ankles with citronella before going out in the thicket, I have little or no trouble; and as this citronella keeps off mosquitos and sandflies I would suggest it as the best and simplest preventive. Another thing, where the woods have been cleared up and crops planted, there is no trouble with the redbugs, and there is little or none to people who live in town unless they get out among the wild woods and scrub palmettos. All such pests belong more or less to new countries before the land has been settled; and, as suggested above, there are certain persons who are never troubled, no matter where they go.

HIGH-PRESSURE GARDENING

A SINGLE TREE WORTH \$30,000.

The article below was mailed us by our youngest daughter, with no explanation as to where it came from, except the remark, "I thought father might like to see this; perhaps it is a fake." Before deciding to give it a place in print I submitted it to my good friend Reasoner, and he replied that it is substantially true, and that one of our Bradenton people with whom I am acquainted had actually seen the tree. To make sure, I called on the lady and got her endorsement. With this introduction I give it to our readers.

The most valuable fruit-tree in the world, so far as can be learned, is an avocado, or alligator pear-tree, owned by H. A. Woodworth, who lives on a five-acre ranch at Whittier, Cal. The tree is insured against damage by wind or fire with Lloyds, of London, for \$30,000. During the year 1912 it yielded its owner a profit of \$3206. The tree is enclosed by a slat fence 38 feet high, which the insurance company requires Mr. Woodworth to maintain.

Seven years ago the tree sprang from the seed of an avocado that was growing wild in the highlands of Mexico. Burt Rideout, a Los Angeles County nurseryman, planted the tree on his five-acre ranch; and when it was three years old he sold the ranch to Mr. Woodworth, a retired Wall Street broker.

Nobody suspected that the tree would prove the money-maker that it is. The average alligator pear-tree does not come into bearing until it is eight or ten years old. Mr. Woodworth's avocado began bearing when it was only four years old. During the fifth year it produced \$1716 worth of fruit and bud wood. In its sixth year it netted its owner \$3206, of which \$1500 was derived from the sale of alligator pears, at the rate of \$6.00 per dozen, and the remainder, or \$1706, was derived from the sale of buds at from ten to twenty-two cents each.

Owing to the scarcity of productive avocado trees there is always a strong demand for bud wood with which to bud young seedlings in the nurseries; and bearing heavily there was a general rush for bud wood. Mr. Woodworth sold all the buds that he cared to take from the tree, and raised the price of

buds to twenty-two cents in order to stop the demand, but that did not check it.

"I was afraid for a while that we were going to injure the tree by cutting buds," he said; "but I guess we didn't hurt it in the least. At any rate, it is loaded with pears again. We took more than 1500 pears from it prior to New Year's day, and I should not be surprised if the total crop amounts to 3000 pears, for the branches are filled with green fruit which is hardly distinguishable, because it is nearly the same color as the foliage." Mr. Woodworth is very proud of the tree.

"That the tree bears any fruit at all is indeed surprising," he remarks, "for it hasn't had half a chance since it made a reputation for itself. Every day throughout the year the crowds of tourists who visit Whittier to see the sights come here to pay their respects to the tree, and they will never be satisfied until I take them within the enclosure so they can touch the tree, break off a twig, take off a leaf, peel off a little scale of the bark, just to see what it looks like."

"Curious persons keep the ground around the tree trampled down so hard that it would be useless for me to attempt to fertilize it. In that connection I may add that fertilization for avocados is a waste of time and money. So is sub-irrigation."

"The avocado comes from the highlands of Mexico and Central America, where it gets little or no moisture from the surface soil. It has a tap root that goes straight down to moisture. With such roots as that, it is useless to try to introduce water and fertilizer from the surface."

"Another thing about the avocado is that it does not need spraying. It is more nearly free from pests and disease than any other tree grown in the West."

The prize tree blooms in March. The crop begins maturing in September, and continues to ripen until late January. A curious thing about the alligator pear is that it is worthless if permitted to ripen upon the tree. The pears, which are light green in color, must be gathered when they have reached the proper size, and laid away in a dark place to mature, like bananas; and when they become mellow they are ready to serve.

The average avocado, when mellow, weighs from eight to ten ounces. It is neither acid nor sweet. It contains a high percentage of vegetable fat—more than that contained in any other known fruit. Persons who cannot digest other fruits find the avocado easy to assimilate. It can be served as a sauce or

dessert. Some use sugar on it, some use salt, vinegar, olive oil, pepper, or spice, and some eat it raw. It is a fruit that may be served in innumerable ways, all of which are good.

The alligator pear-tree is just now claiming the attention of orchardists in many parts of the world. It is not many years since its introduction into this country. The first trees brought into the United States came from Hawaii and South America. Nearly all of them died. The alligator pear from the Mexican highlands has proved to be the best, for the reason that it is accustomed to a high altitude in its native haunts, and it withstands the cool weather of the Southern States quite well.

Right here come in some tables of figures; but as they are not very clear to me I omit them. The paper closes as follows:

The avocado selling at 40 cts. was a two-pound one. It thus sold at 20 cts. per pound. On an average it takes eight eggs to weigh one pound. With eggs selling at 50 cts. per dozen, or 5 cts. each, they would sell for 40 cts. a pound. With avocadoes selling at the enormous price of \$6.00 per dozen, and possessing, as has been shown, the same food values as eggs, it will be seen that they are selling for 15 cts. a pound cheaper than eggs are selling for, when the latter move at 50 cts. per dozen. The same line of reasoning will show that the consumer could afford to pay \$7.20 per box of 48 avocadoes; and at the same time he can buy eggs at 15 cts. per dozen.

Thirty-eight feet high is an awful "fence," and Mr. Reasoner felt sure the fence was only about *fifteen* feet high; but Miss Wyman says she thinks 38 feet is correct. She says it is a tremendously big tree, and the fence went up nearly to the top. As the avocado does not stand much frost I have been wondering if this fence were not, at least originally, for weather protection as well as to keep out thieves.

The alligator pear has been grown more or less in South Florida for 20 years or more. Reasoner says of it in his catalog, "The most valuable fruit in the American market." Until quite recently it has been out of season when we got here in November, but now we have a variety called "Trapp" that ripens from November to January, and I am pleased to tell you that we have three trees, now growing in our garden, that cost \$2.00 each, catalog price. I have given you this story after finding it is substantially true, because it illustrates so vividly the *possibilities* of agriculture and horticulture. Of course it remains to be proven that buds from this wonderful tree will produce in other localities as the tree does in its California home; but we shall soon know about this.

As I write, this evening of Dec. 8, I realize that in a few more hours I shall be 75 years old. As Mrs. Root was about to retire we have just knelt together, and I have thanked the kind Father that he has permitted us to live thus long, with physical strength and activity almost unimpaired. I thanked him, too, for the progress I have

been permitted to see in giving hungry humanity better and more nourishing fruits and vegetables, and also the better and greater results* for those who till the soil. I can easily recall when tomatoes were unknown as an article of food, and yet *now* the growing and putting them up for a wholesome and nourishing food is a great world-wide industry. I might say almost the same thing of celery and many other things. Our Department of Agriculture is just now "ransacking the whole wide world" to see if there are not somewhere, heretofore unnoticed, things that are better than what we have already. What a glorious thing it is to have a part, just a little part, in helping to bless humanity after we are gone! If I am right, the good man who gave us the Concord grape was scarcely recognized and remembered until after his death. Once more, what a "glorious thing" it would be if all humanity and all nations were working in harmony and brotherly love to *hunt up and develop "God's gifts"* heretofore unknown and unrecognized, instead of seeking to destroy each other!

FORTY-FIVE CENTS EACH, WHOLESALE, FOR TRAPP AVOCADOES.

While giving place to the clipping below, let me say the avocado trees in our garden are of the Trapp variety. They came from Miami in wooden boxes about a foot square (like potted plants), and cost \$2.00 each.

RECORD PRICE FOR AVOCADOES.

Miami.—Forty-five cents each for avocadoes. This, it is believed, is absolutely the record price ever received in the wholesale market for this fruit, and was paid in Chicago for a crate of Trapp avocadoes raised in the Miami Beach orchard. A telegram received by T. J. Pancoast, secretary of the orchard company, yesterday afternoon contained the information that \$21.00 had been received for the crate. Investigation of the records showed that there were just forty-six avocadoes in that crate, which makes their price a fraction over 45 cents each.—*Fruit Trade Journal*, New York.

MAILING DASHEEN TUBERS ACROSS THE OCEAN, ETC.

Mr. Root:—Noting your trouble in sending dasheens by mail across the ocean, there is no trouble provided you dry the tubers about ten days in a dry shaded place, then pack in perfectly dry excelsior. We ship a good many caladiums, etc., in this way.

English walnuts have turned out failures in Florida; also are subject to root-knot. They do not like our long warm and humid summer. We are about 500 miles too far south for them, as they will grow moderately well in the upper part of the southern states.

Oneco, Fla., Jan. 11.

E. N. REASONER.

We have recently had reports of tubers going even to South Australia and then germinating. We too have failed here with English walnuts.

* You have all noticed, more or less, what the "corn boys and girls" have done in developing possibilities.

TEMPERANCE

RUSSIA; ITS EMANCIPATION AS THE RESULT OF THE WAR, ETC.

We clip the following from the New Britain (Ct.) *Herald*:

DRUNKEN RUSSIA TO SOBER RUSSIA.

This terrible war raging across the seas has been a series of astonishing happenings. None, perhaps, has been more unexpected than the complete abolition of the liquor traffic in Russia. The prohibition of the sale of alcoholic drinks was a temporary war measure to prevent disorder during the mobilization of the army, which was a powerful acknowledgment that alcoholic drinks are a disturber of peace and an excitant to the worst passions of human nature.

At the end of a month the transformation from drunken Russia to a sober Russia was such an illuminating lesson in favor of absolute prohibition of the sale of intoxicating drinks that the Czar, in answer to a solicitation from the president of the Russian Union of Abstinence, that the sale of spirituous liquors be forever discontinued, replied:

"I thank you. I long ago decided to interdict for all time in Russia the sale of alcoholic drinks by the government."

George Kennan, the proficient critic of Russia, says in the *Outlook*: "For the first time in the history of mankind one-seventh part of the habitable globe has gone dry, and 170,000,000 people have stopped drinking intoxicating liquor. For many weeks the sale of vodka has been completely suspended, and the whole population has looked at the European situation through absolutely sober eyes." Our own government, which prides itself upon its advanced civilization, would do well to pause and ask itself if its boasted moral superiority can be maintained in the face of this grand step taken by the Czar of all Russia who has banished from his empire an evil that has not one redeeming quality, but is an unspeakable and unqualified menace to the peace and happiness and prosperity of every nation within whose gates it is tolerated.

The revival of industry, thrift, and self-respect which so quickly followed the suppression of the liquor in Russia was an object-lesson which the Czar of Russia was keen enough to perceive, and great enough to accept and apply to the good of his people; and herein lies his superiority over all other rulers of the world. It was the Kaiser of Germany who, not many months before the war began, said that the nation that would rule the world would be the nation that abolished the liquor traffic. This war has revealed to the world a new Russia in more ways than one, and the world may well tremble before a sober Russia. Mr. Kennan, who has long studied Russia at close range, says: "In the list of Russia's spiritual awakening, the spontaneous and universal welcoming of prohibition as a great national blessing for which everybody is ready is not the only proof of her extraordinary growth," and adds, "If the war should do nothing more than free Russia from the curse of vodka it would be worth all that it can possibly cost in treasure and life." Must our own beloved country pay such a price to become a sober nation? We may rest assured that the Kaiser's opinion was not based on an idle dream, but upon hard common sense and a knowledge of the degenerating influence of alcoholic drinks.

Do we not as a nation need as keen human efficiency as the ball-player? In *McClure's Magazine* Connie Mack's management of his ball team is good logic for the government of a people to follow, and Russia has followed it. Connie Mack says:

"Keep in mind that steady—'moderate'—drinking gets a ball-player in the end just as sure as boozing alcohol slows a man down inevitably, and slowing down is the reason for the shelving of by far the majority of players." He also says, "You ask me why the world's champions have done so well. I have to answer: Because of the kind of lives they lead, and their consequent ability to think and act quickly in an emergency. It is not a matter of morals to our club, but of human efficiency." *Are we to require less efficiency in our legislators than is required in our professional sports?* It is a fact that on the "hundred thousand dollar infield" not a man has ever known the taste of liquor. Why not apply the same rule to our senators and representatives? Do we not need as high an efficiency "to think and act quickly" in our law-makers as in our ball-players?

The fact of it is, we have not brought to bear the same intelligent common sense in choosing our lawmakers as the manager of the field of sports has in the choice of his players; hence the colossal failure of our democratic government. Lastly, listen to these sensible words of Connie Mack: "From the standpoint of the public—the people who pay their 25, 50, 75 cents or a dollar to see good baseball, they are entitled to see the player at his best—not slowed up by drink." Are the tax-payers of America entitled to less? The Kaiser of Germany was right. The nation that dominates the world will be the nation that is not slowing up through drink. Russia dominates the world to-day in spiritual superiority. She has recognized the right of her people to a government not crippled by alcoholic drinks.

America should have been the nation to set the world this lofty stand—and—alas! she has failed just at her most boasted point—her moral and spiritual superiority. Russia will ever stand on the pages of history as the first nation to break the shackles of the liquor traffic from off her people. The great man is he who seizes the opportunity and crystallizes it into a living fact. The Czar of Russia stands at this hour the greatest man among all nations.—*Marinda C. Butler Robinson*.

A FORETASTE OF HEAVEN.

A country vicar, writing in the *Novoye Vremya*, says of the changed conditions in Russia under prohibition:

"The old women in the villages can hardly believe their own eyes and ears, so changed are their men-folk. Not a hard word, not a row, but everywhere peace, kindness, and industry. War is said to be hell; but this is like a foretaste of heaven."—*Union Signal*.

TOY PISTOLS, ETC.

Mr. A. I. Root—GLEANINGS came in to-day; and, as I always do, I turned first to your letter and then the article following; and to the letter from Chas. R. Hill I want to give my support. I have only one boy, 13 years old, and, of course, I think more of him and of my 78-year old father than of any other man or boy living; but I have never loved him well enough to buy for him a toy pistol. I think a father's love should run in an entirely different channel than that of pistols for his boys.

I hope you will enjoy the winter in Florida, and live many years yet to keep mankind in the straight and narrow way.

Lake Butler, Fla., Nov. 19. CHAS. H. REGISTER.